FIG. 1

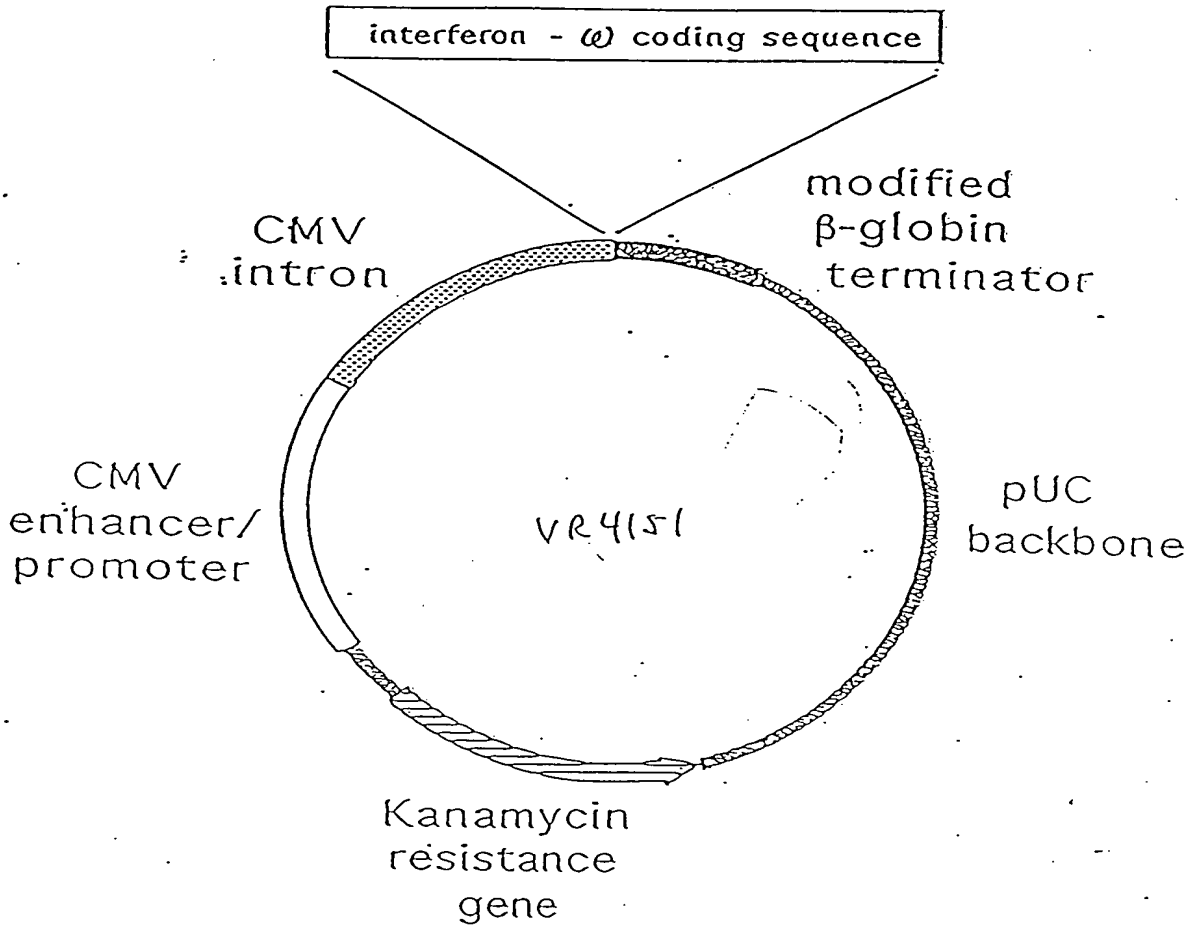
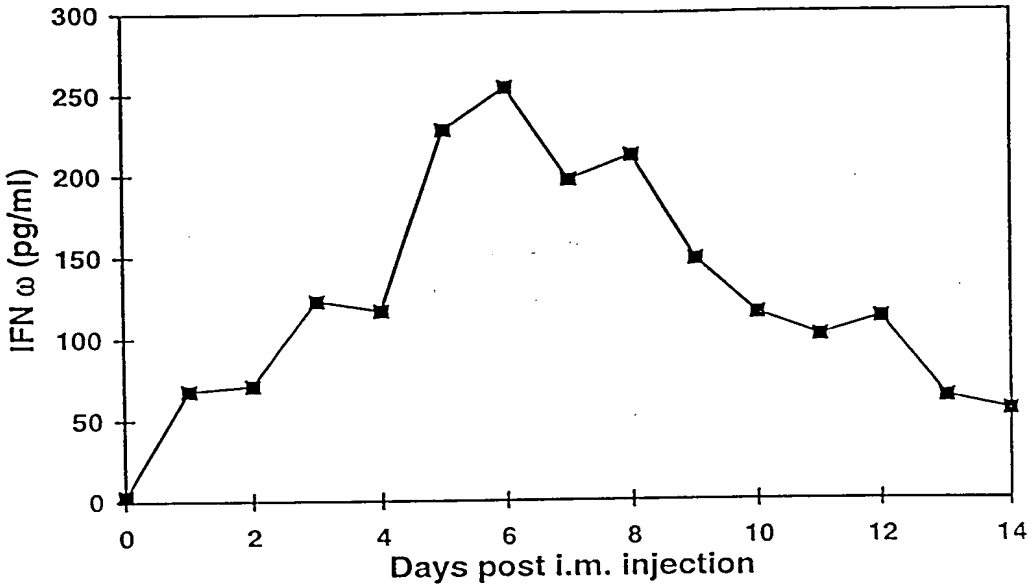

interferon - ω coding sequence
modified β-globin terminator
CMV intron
CMV enhancer/ promoter
VR4151
pUC backbone
Kanamycin resistance gene

Figure 2
A


300
250
200
150
100
50
0
IFN ω (pg/ml)
0
2
4
6
8
10
12
14
Days post i.m. injection

B

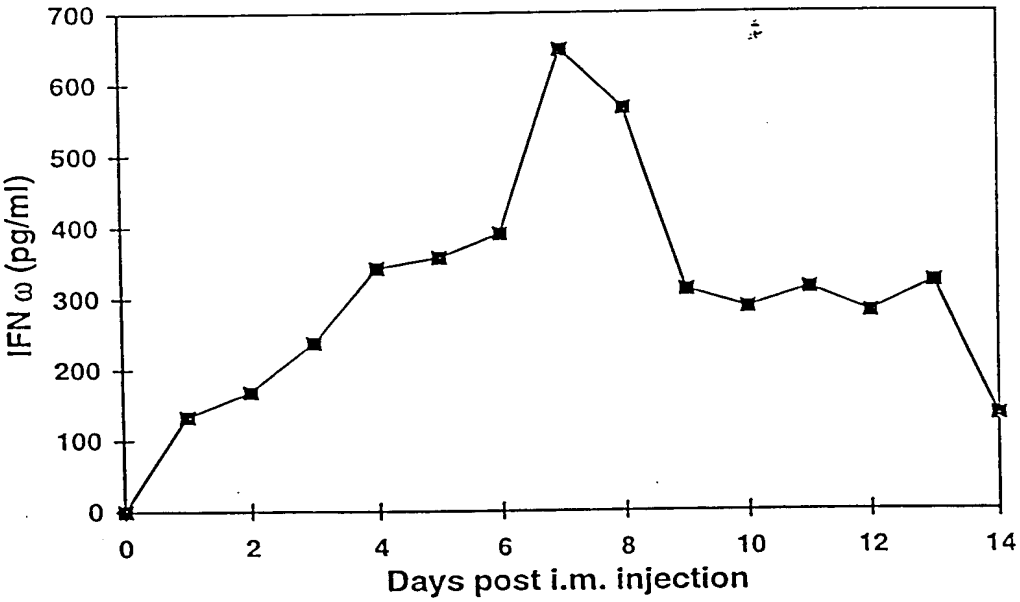
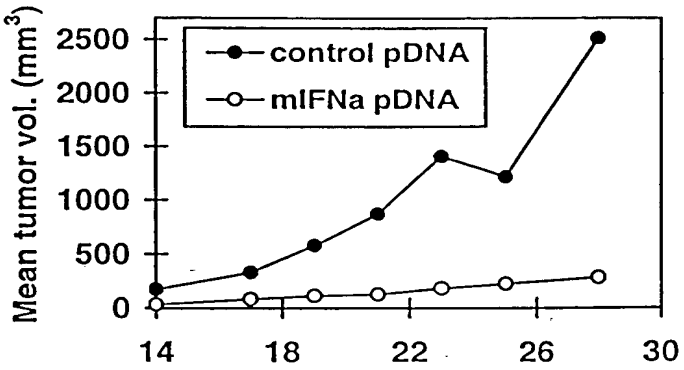

700
600
500
400
300
200
100
0
IFN ω (pg/ml)
0
2
4
6
8
10
12
14
Days post i.m. injection

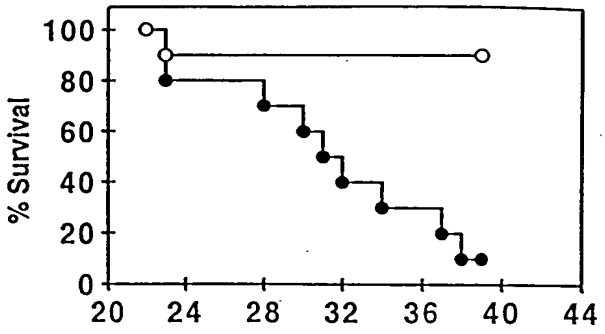
Figure 3

B16F10 Melanoma:

A

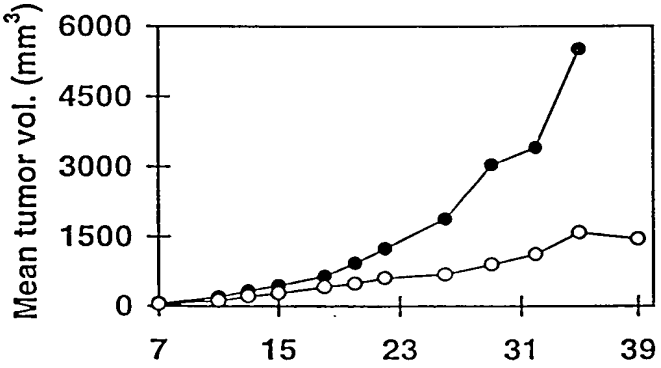


B

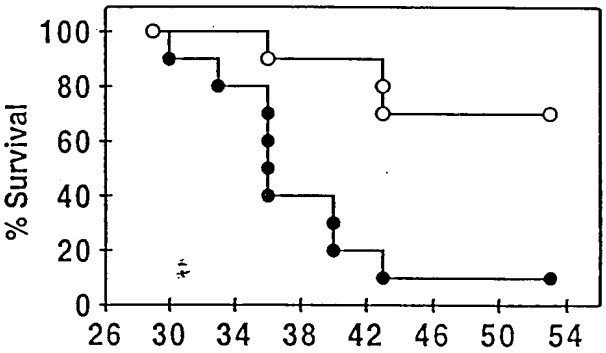


Glioma 261:

C

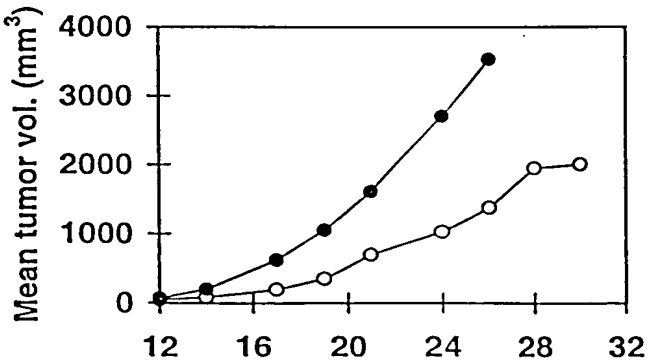


D

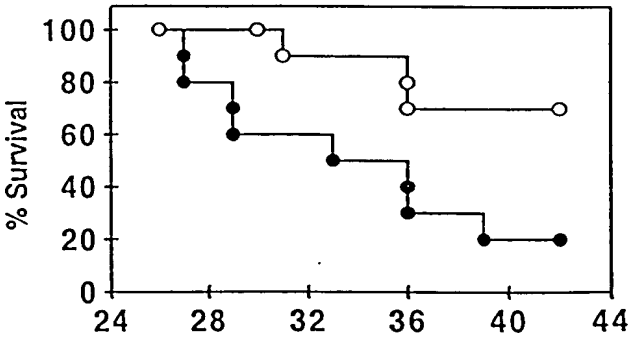


Cloudman Melanoma:

E



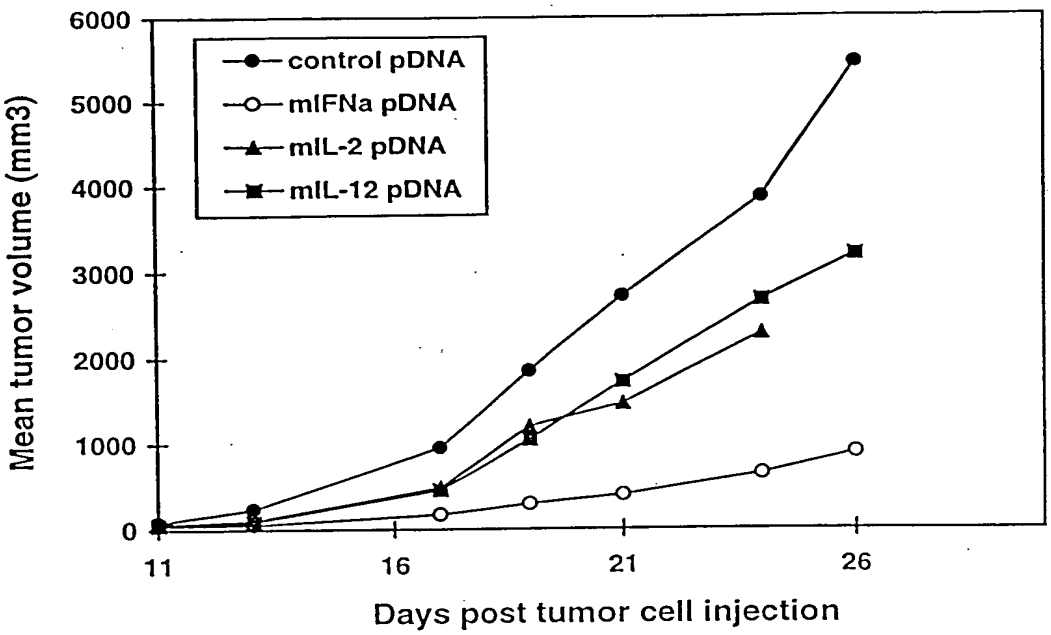
F



Days post tumor cell injection

Figure 4

A


6000
5000
4000
3000
2000
1000
0
Mean tumor volume (mm3)
control pDNA
mIFNa pDNA
mIL-2 pDNA
mIL-12 pDNA
11
16
21
26
Days post tumor cell injection

B

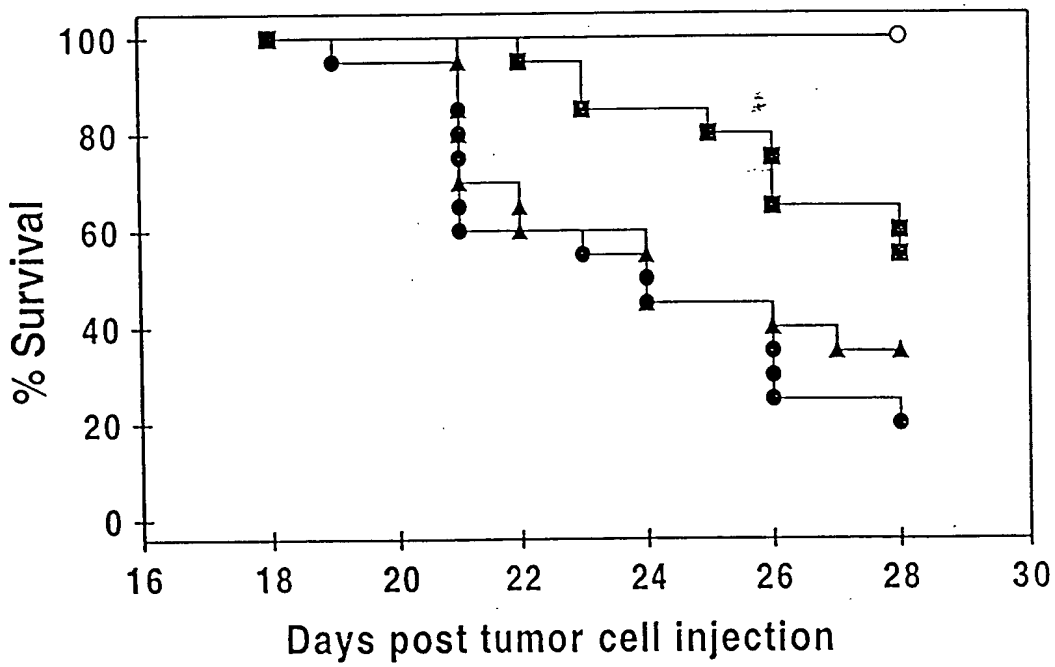
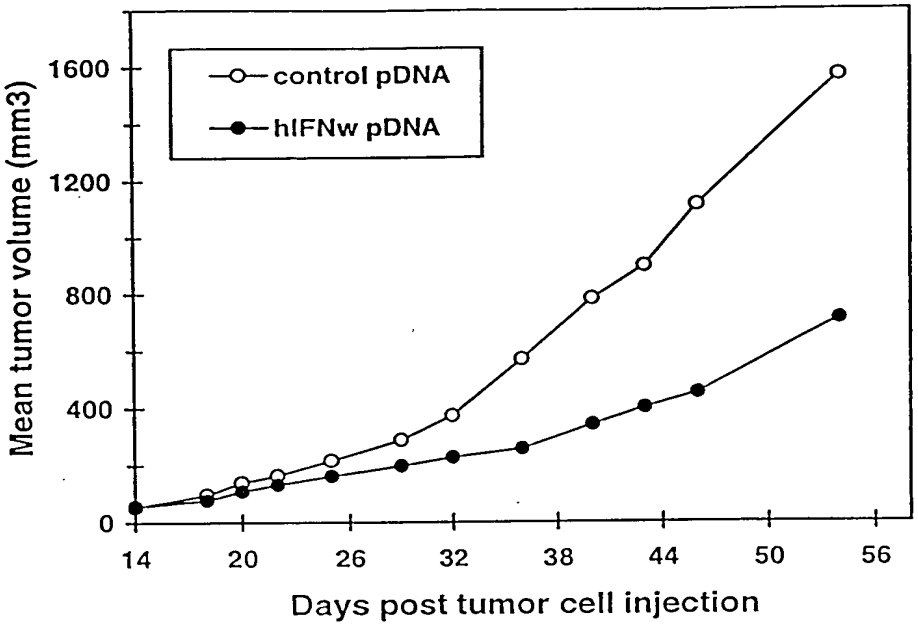

100
80
60
40
20
0
% Survival
16
18
20
22
24
26
28
30
Days post tumor cell injection

Figure 5
A


control pDNA
hIFNw pDNA
Mean tumor volume (mm3)
1600
1200
800
400
0
14
20
26
32
38
44
50
56
Days post tumor cell injection

B

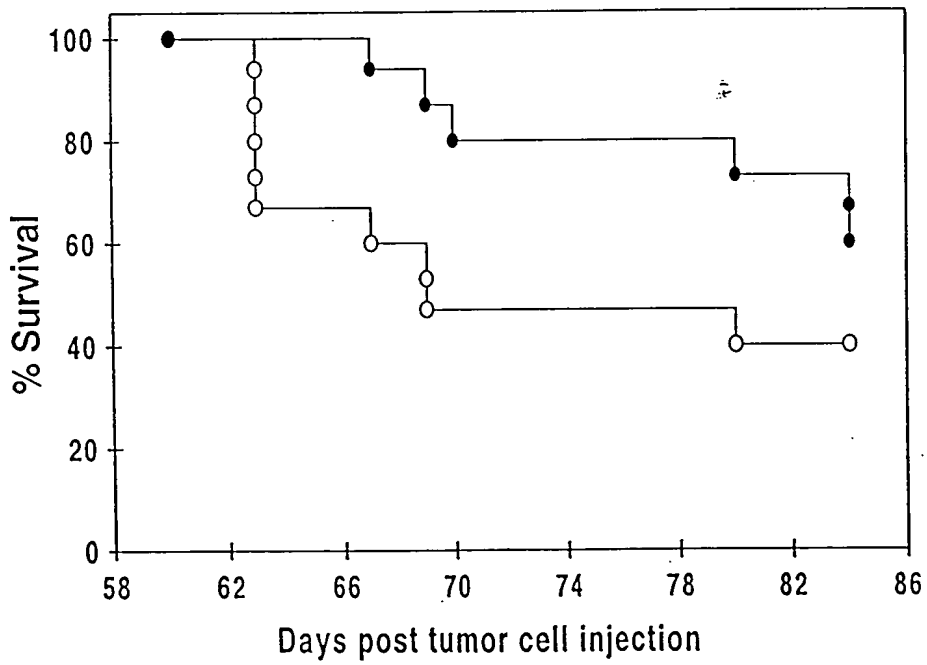

% Survival
100
80
60
40
20
0
58
62
66
70
74
78
82
86
Days post tumor cell injection

Figure 6

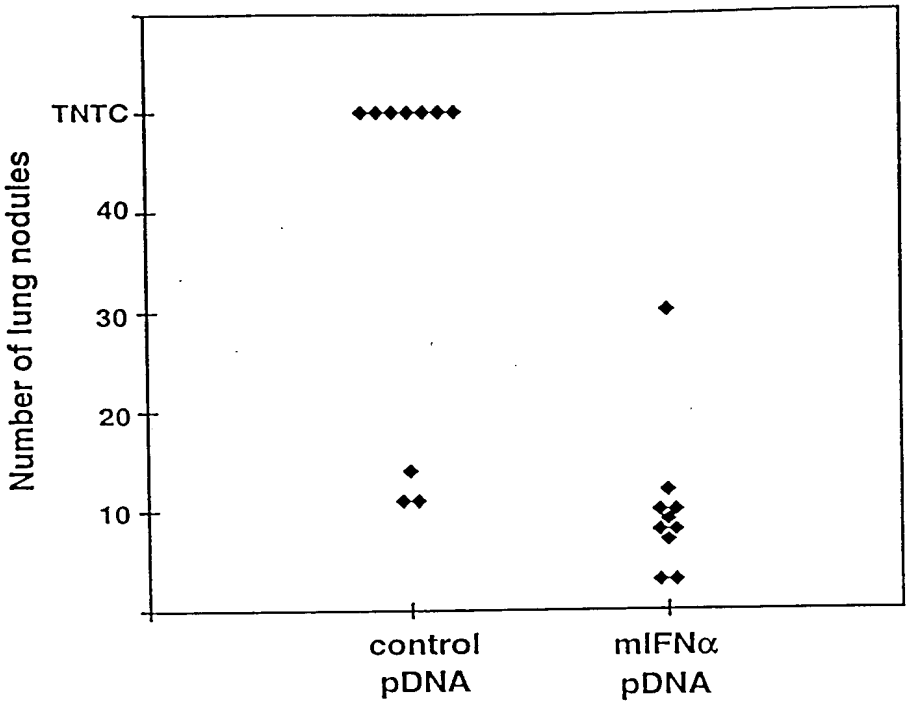
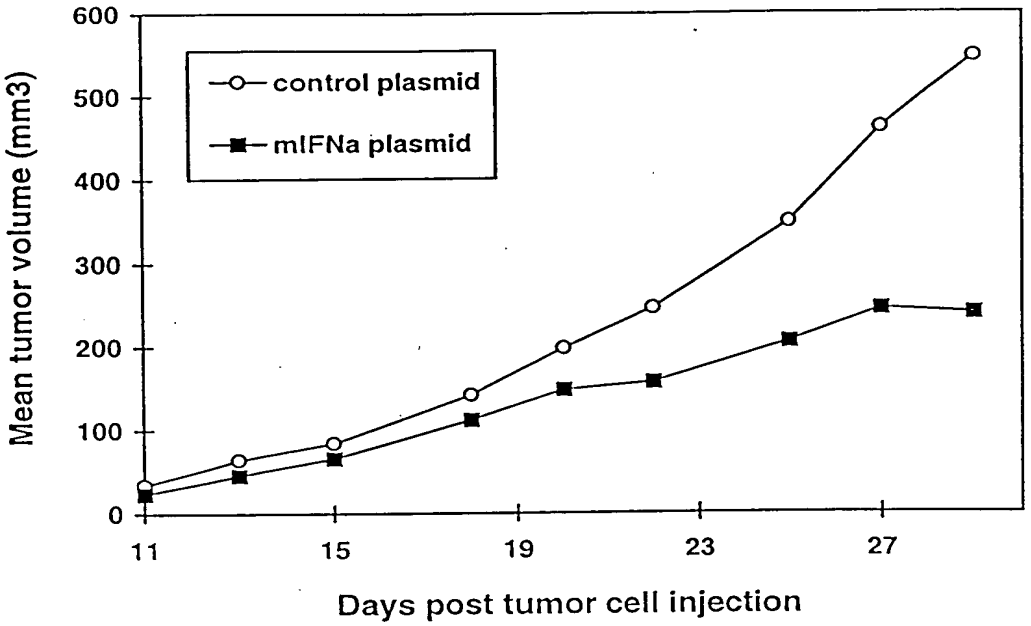

TNTC
40
30
20
10
Number of lung nodules
control pDNA
mIFNα pDNA

Figure 7

A


600
500
400
300
200
100
0
Mean tumor volume (mm3)
control plasmid
mIFNa plasmid
11
15
19
23
27
Days post tumor cell injection

B

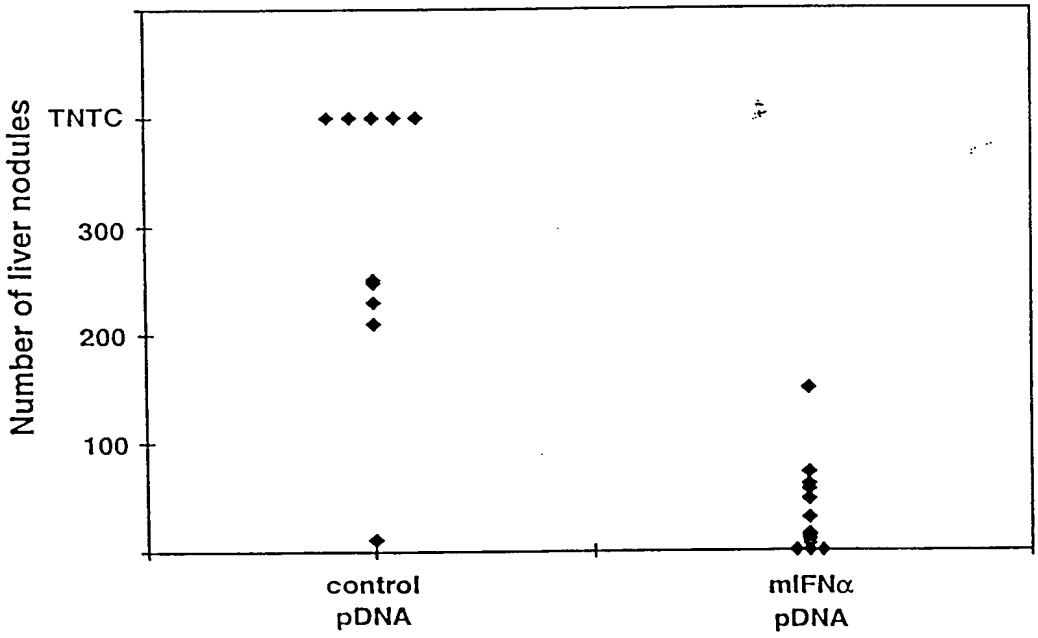
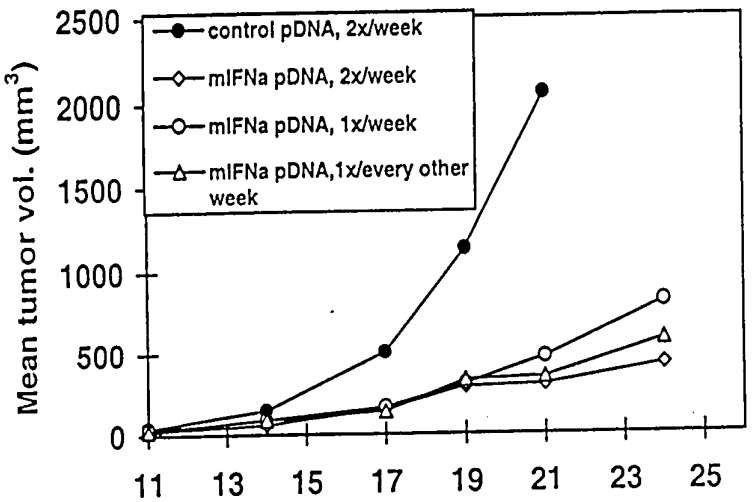

TNTC
300
200
100
Number of liver nodules
control
pDNA
mIFNα
pDNA

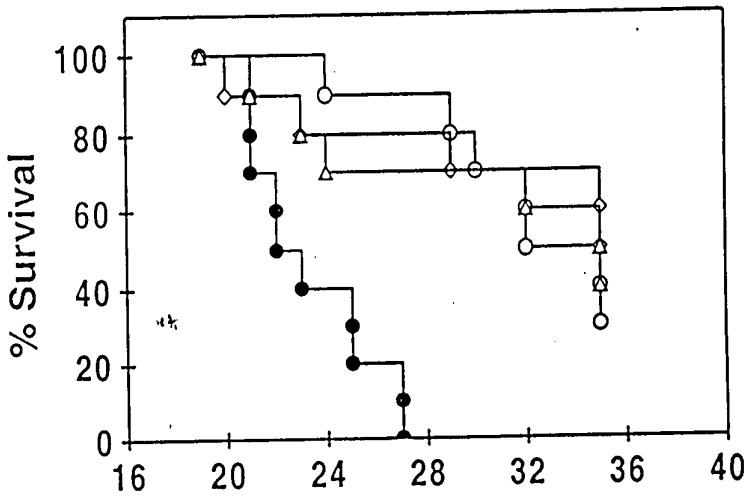
Figure 8

100 µg DNA:

A

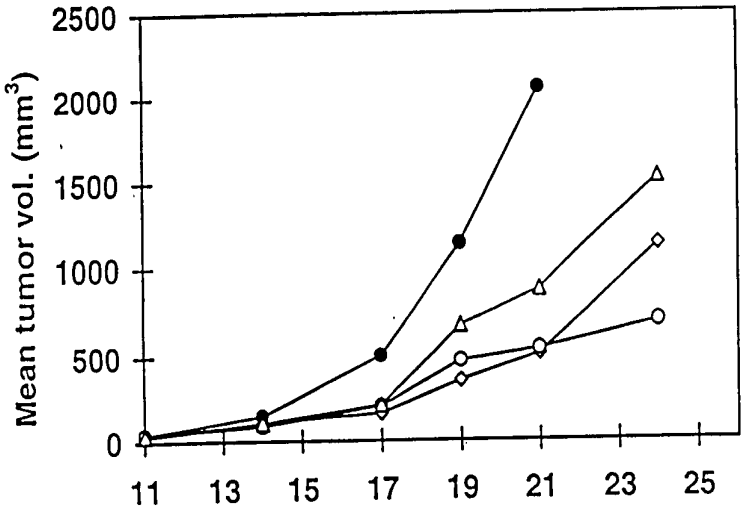


B

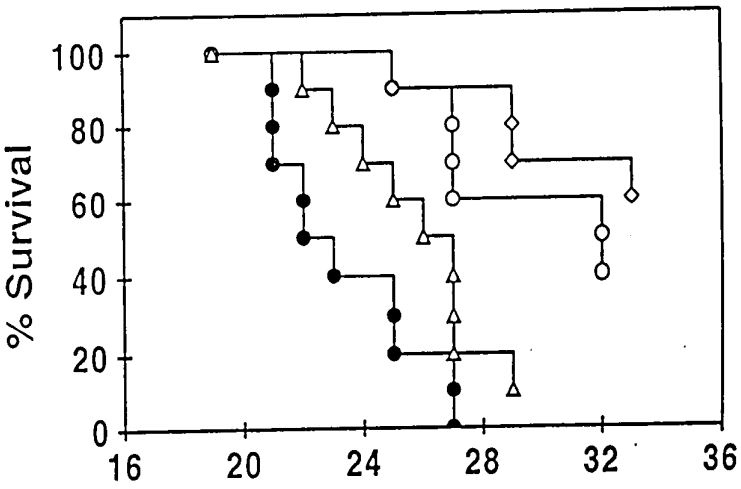


50 µg DNA:

C



D

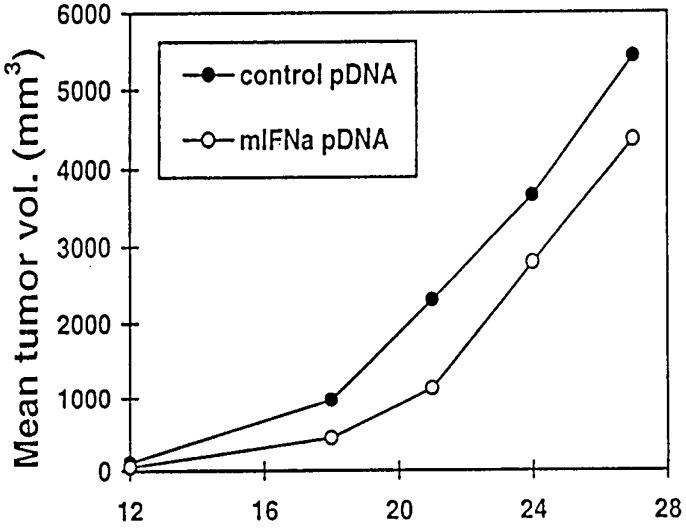


Days post Tumor Cell Injection

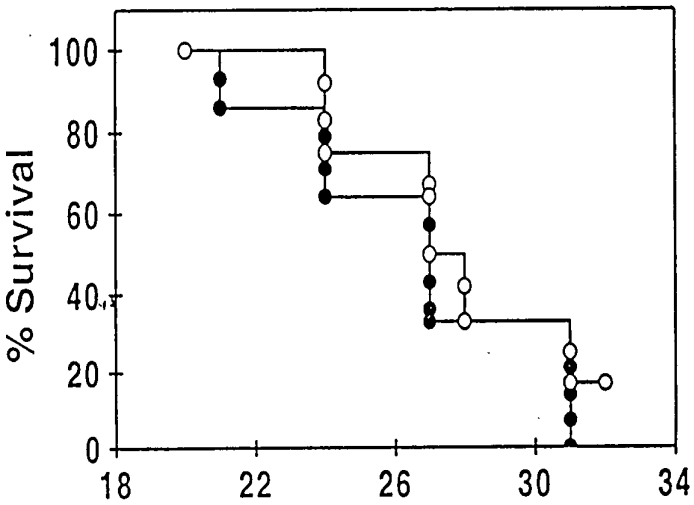
Figure 9

Nude Mice:

A

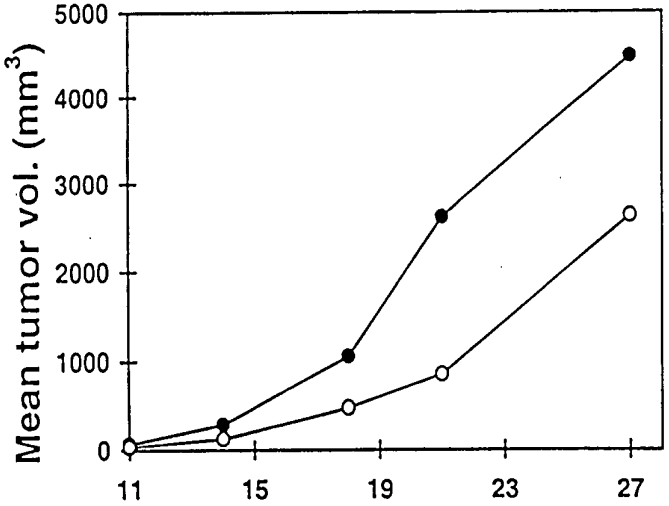


B

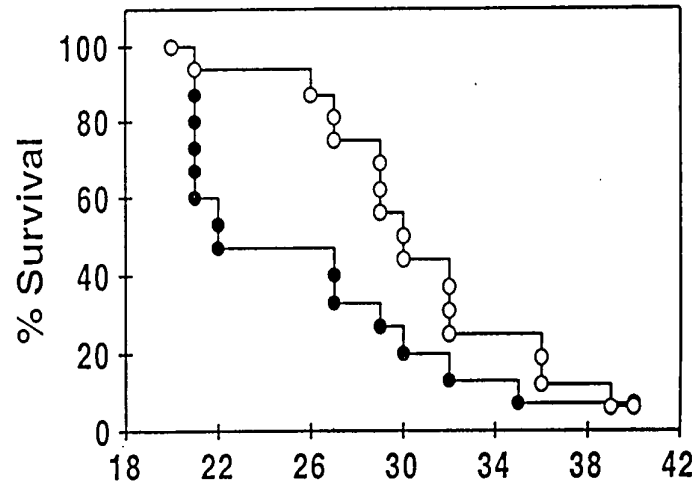


Beige-Nude Mice:

C



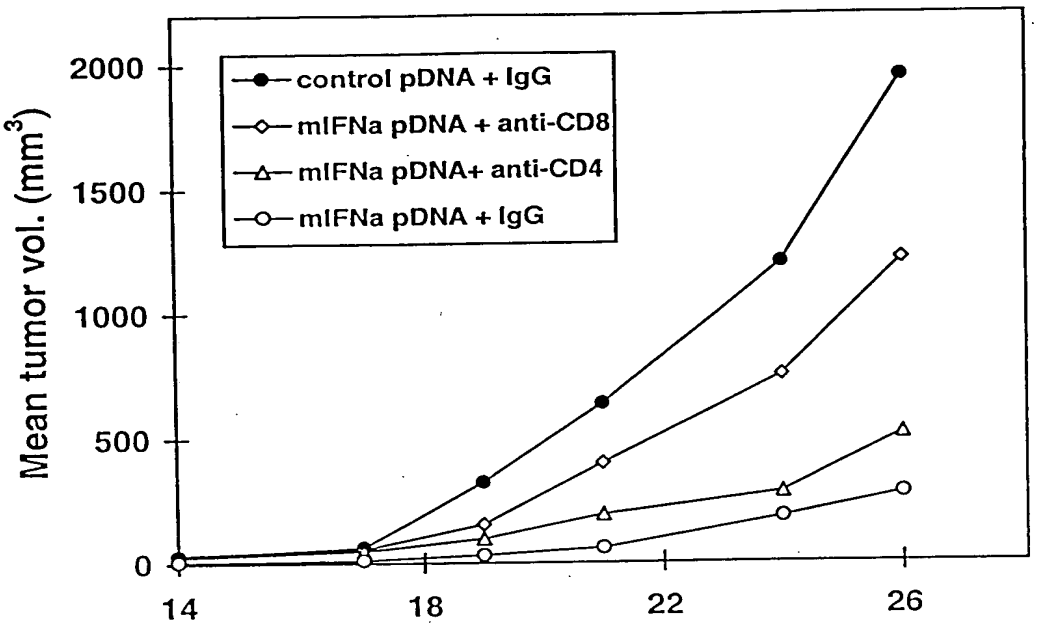
D



Days post tumor cell injection

Figure 10

A


control pDNA + IgG
mIFNa pDNA + anti-CD8
mIFNa pDNA+ anti-CD4
mIFNa pDNA + IgG
Mean tumor vol. (mm3)
2000
1500
1000
500
0
14
18
22
26

B

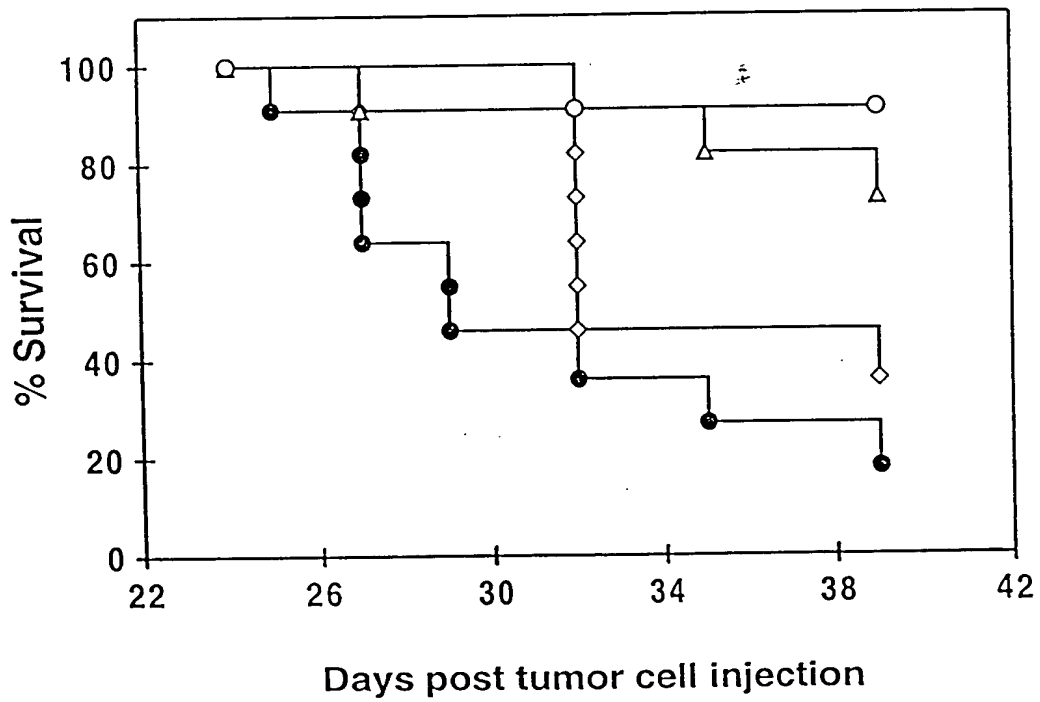
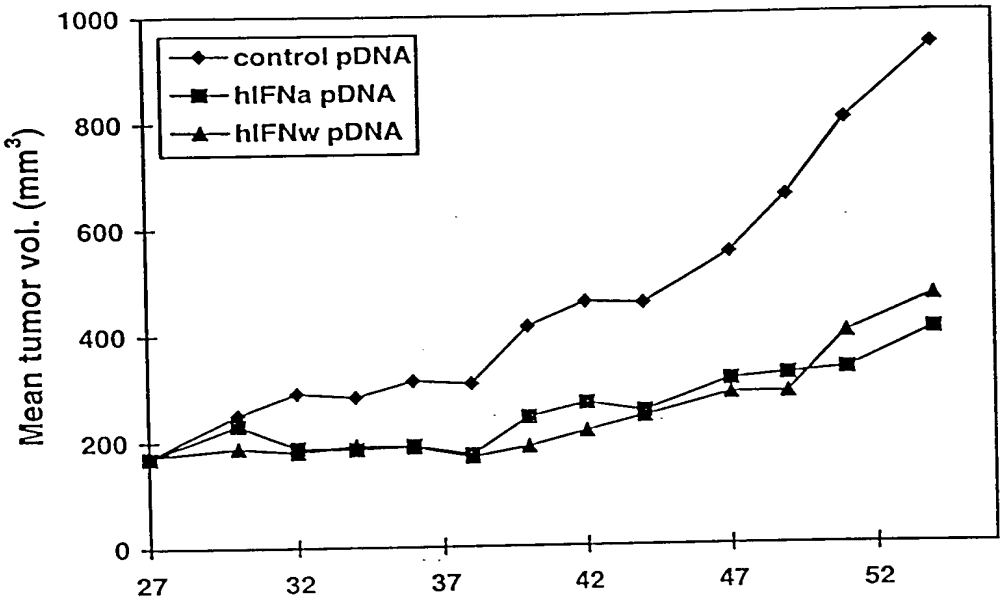

% Survival
100
80
60
40
20
0
22
26
30
34
38
42
Days post tumor cell injection

Figure 11

A


control pDNA
hIFNa pDNA
hIFNw pDNA
Mean tumor vol. (mm3)
1000
800
600
400
200
0
27
32
37
42
47
52

B

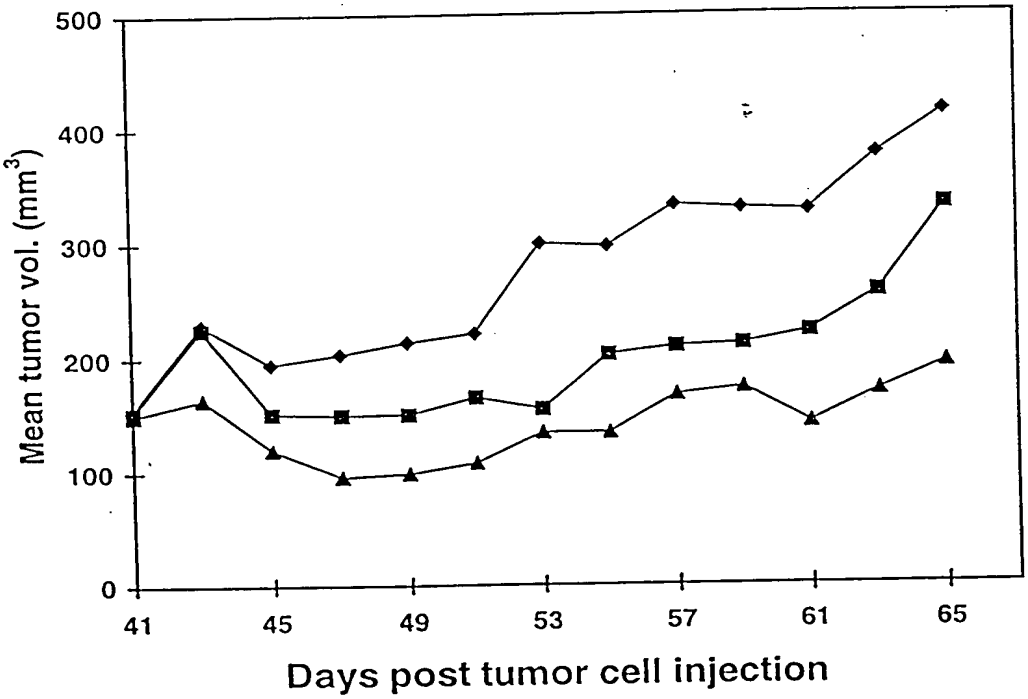
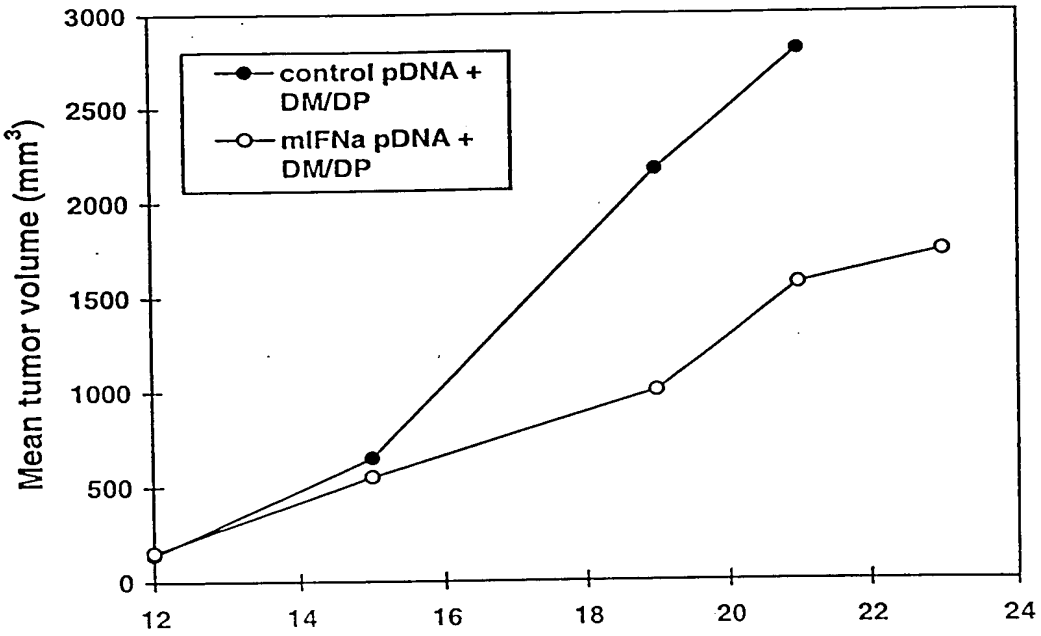

Mean tumor vol. (mm3)
500
400
300
200
100
0
41
45
49
53
57
61
65
Days post tumor cell injection

Figure 12

A


3000
2500
2000
1500
1000
500
0
Mean tumor volume (mm3)
control pDNA + DM/DP
mIFNa pDNA + DM/DP
12
14
16
18
20
22
24

B

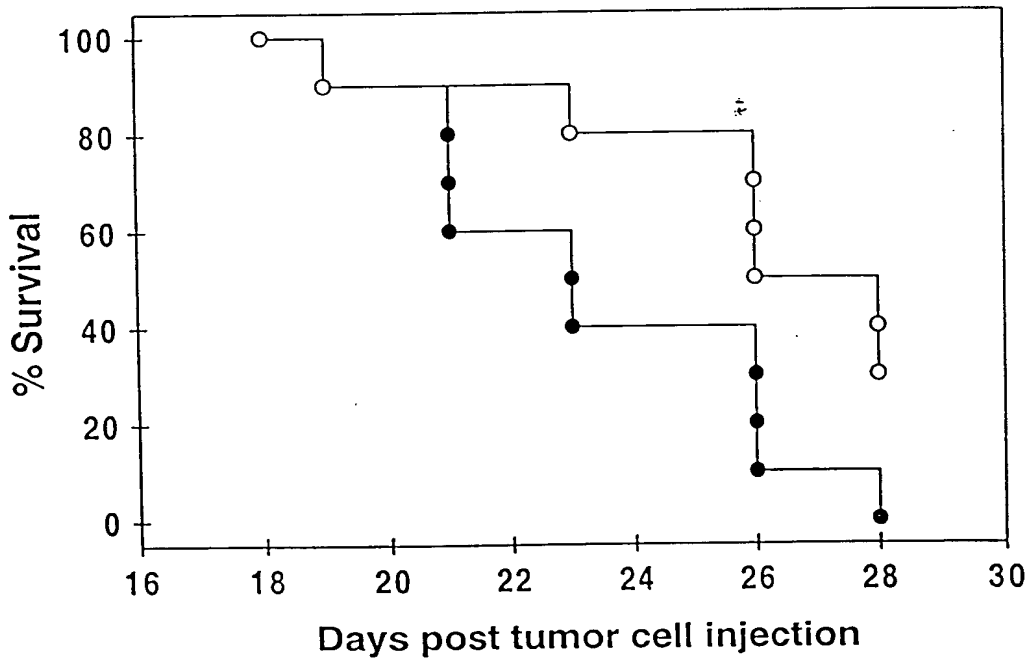
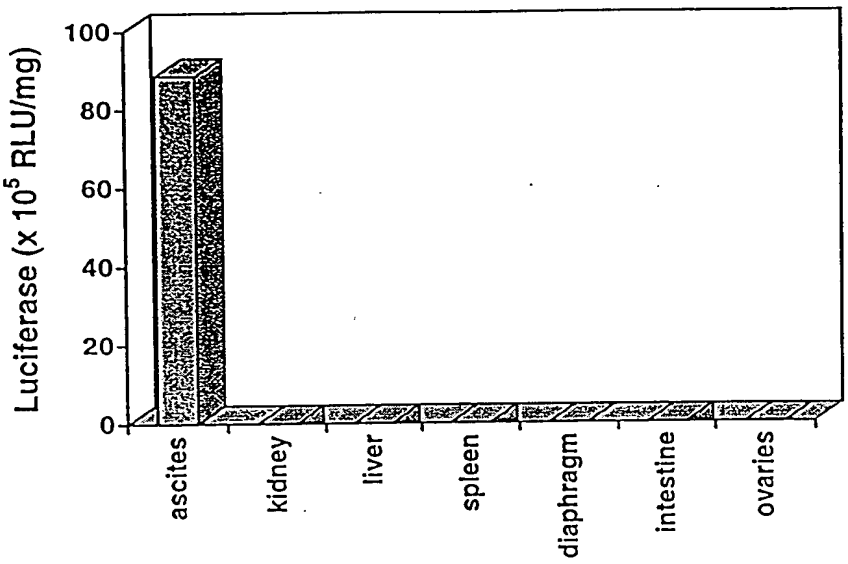

100
80
60
40
20
0
% Survival
16
18
20
22
24
26
28
30
Days post tumor cell injection

Figure 13

A Day 1 after DNA:lipid



B Day 3 after DNA:lipid

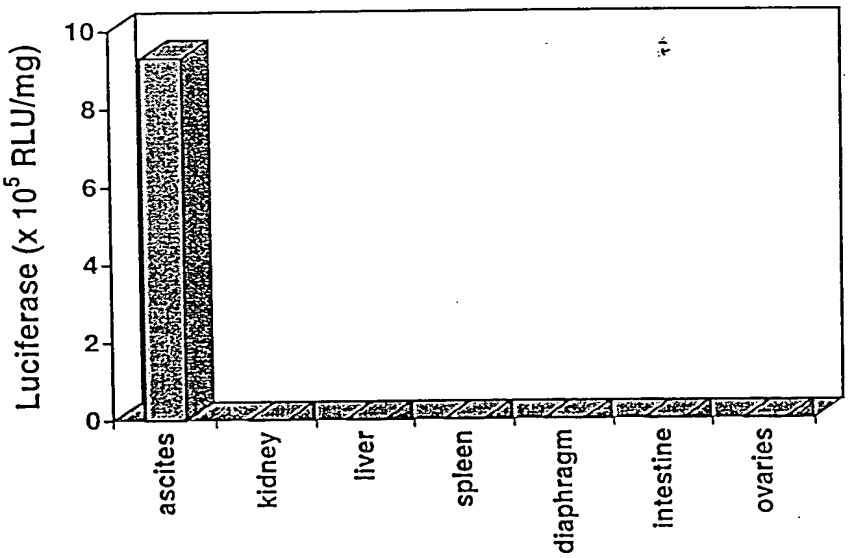
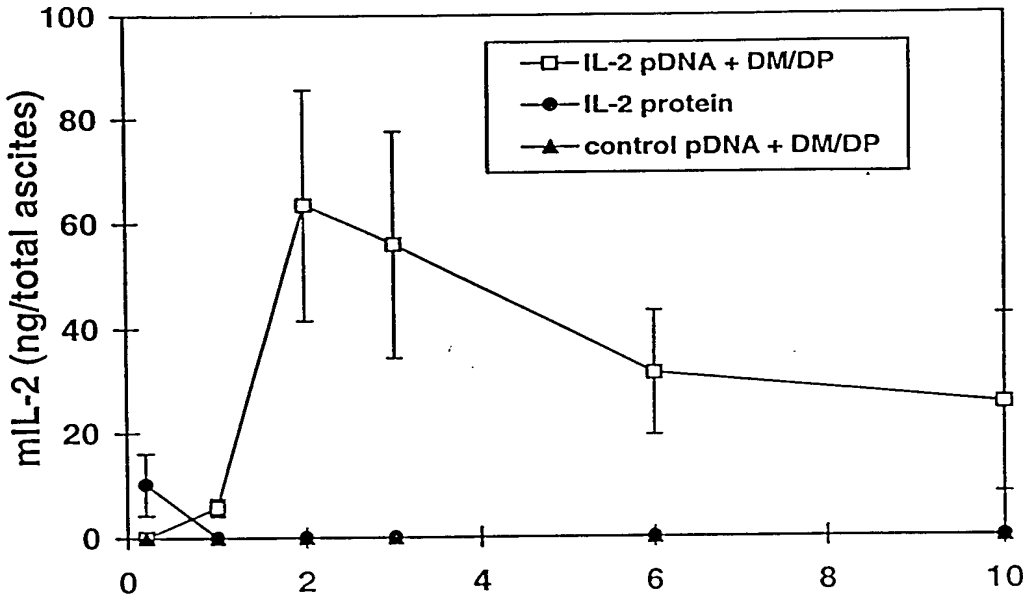


Figure 14

A Ascites



B Serum

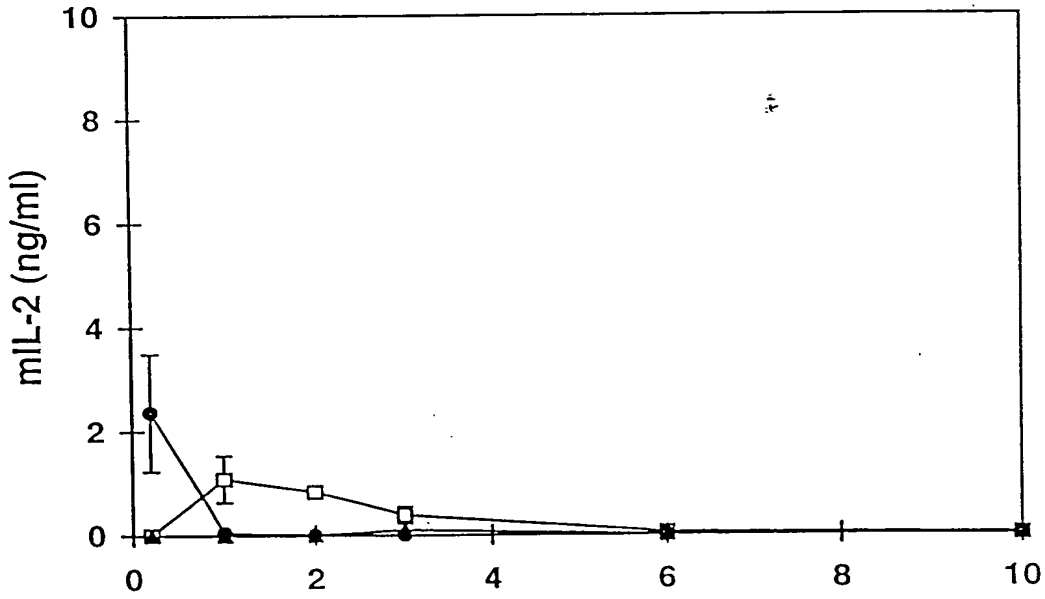
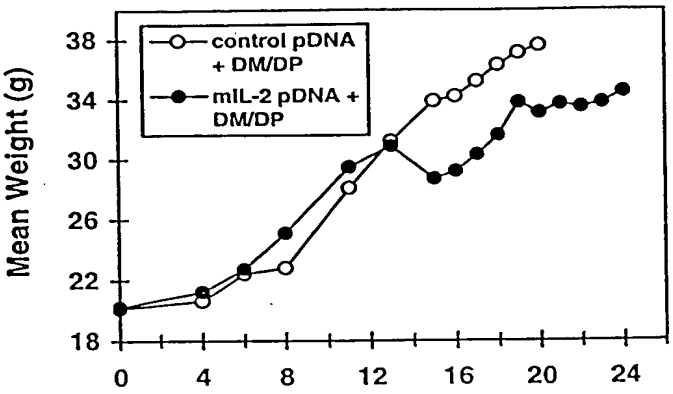


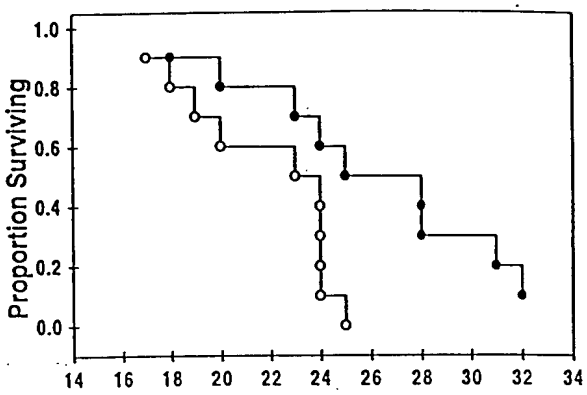
Figure 15

1:1 pDNA:DM/DP

A

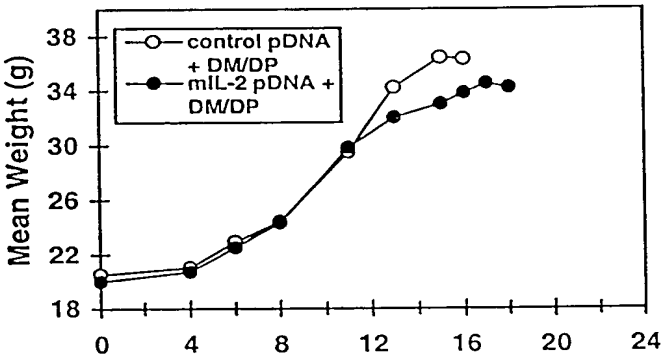


B

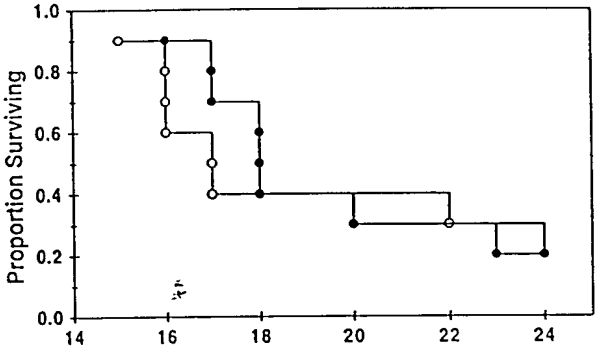


5:1 pDNA:DM/DP

C

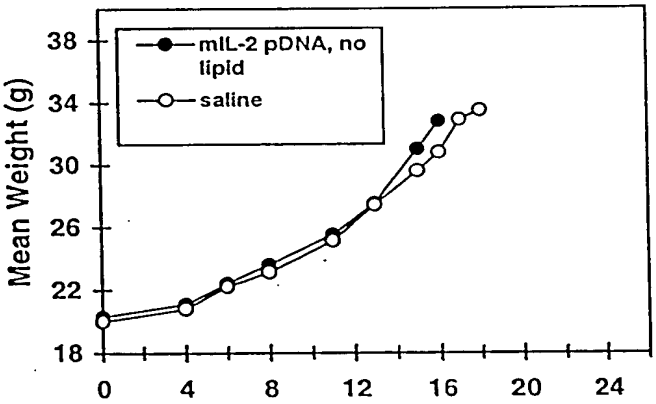


D

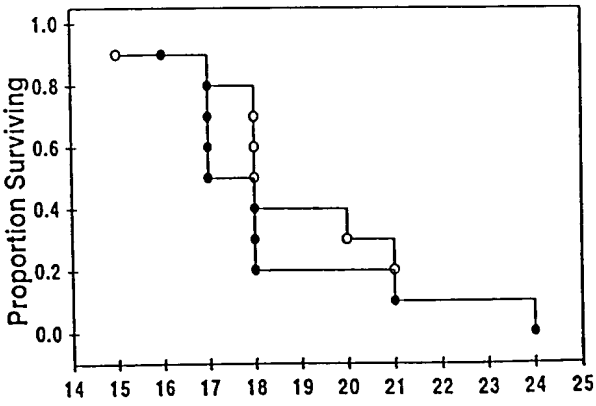


pDNA without DM/DP

E



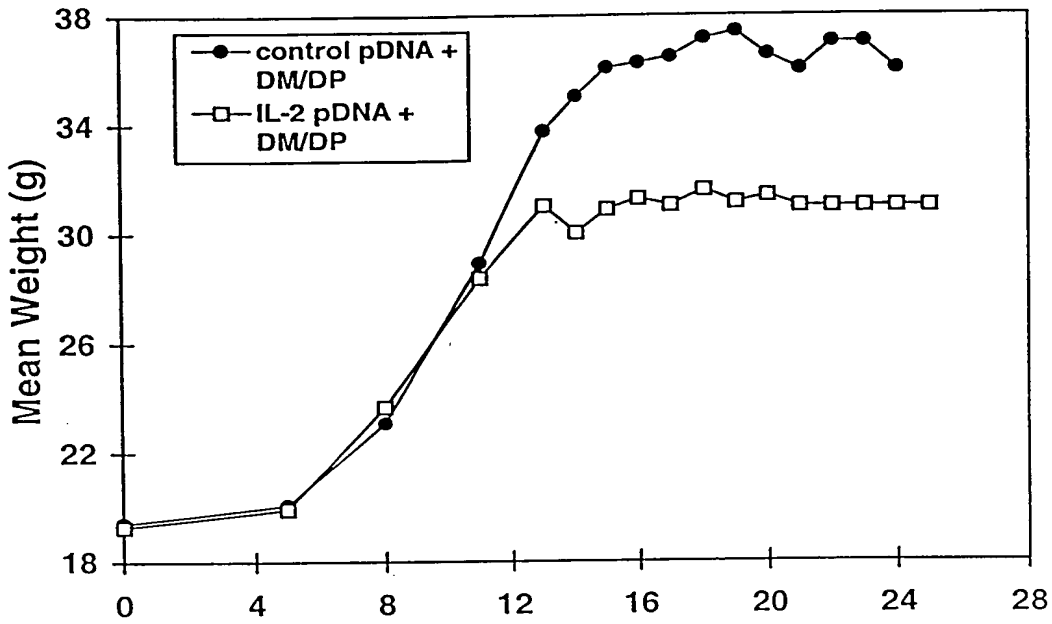
F



Days post tumor cell injection

Figure 16

A


control pDNA + DM/DP
IL-2 pDNA + DM/DP
Mean Weight (g)
38
34
30
26
22
18
0
4
8
12
16
20
24
28

B

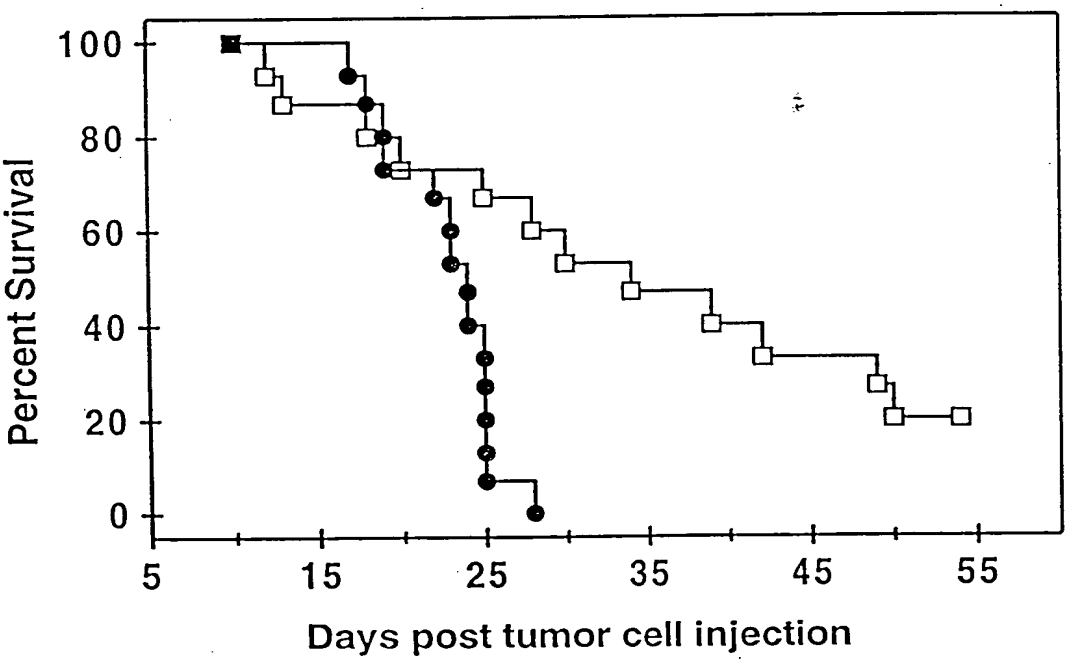
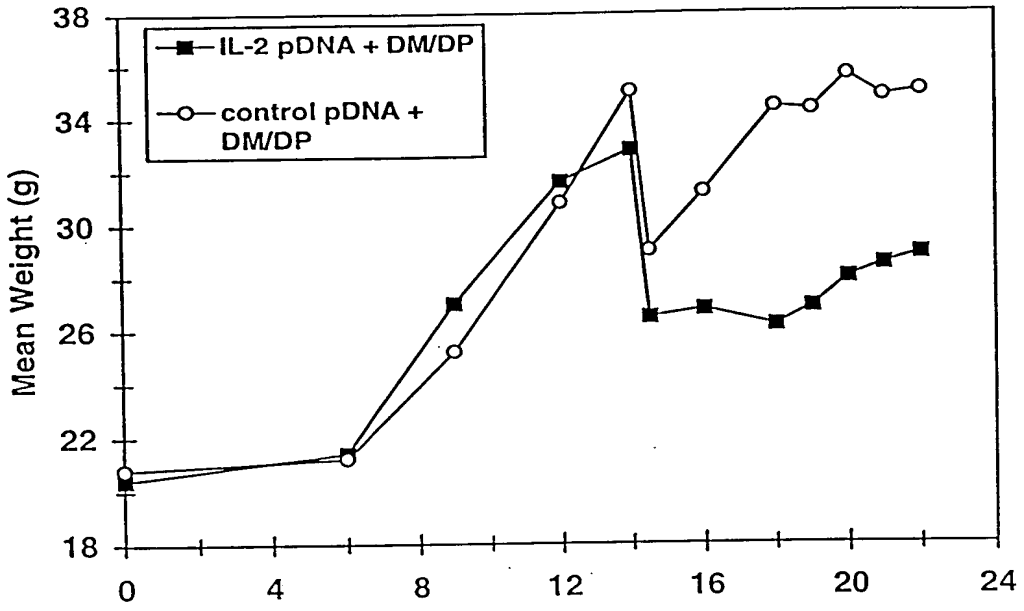

Percent Survival
100
80
60
40
20
0
5
15
25
35
45
55
Days post tumor cell injection

Figure 17

A


IL-2 pDNA + DM/DP
control pDNA + DM/DP
Mean Weight (g)
38
34
30
26
22
18
0
4
8
12
16
20
24

B

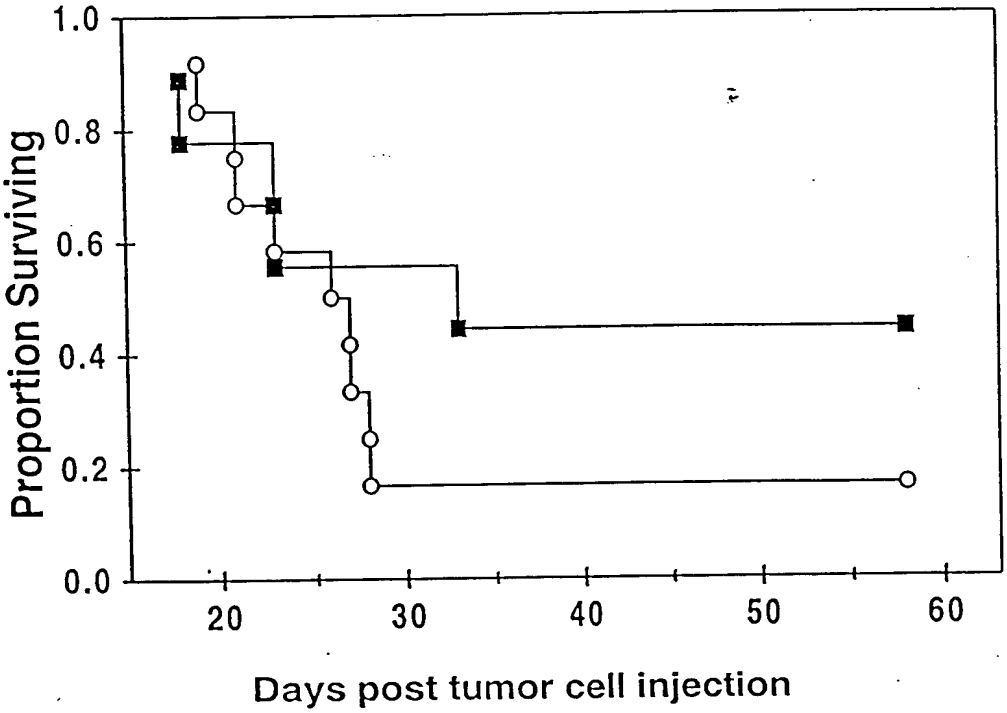
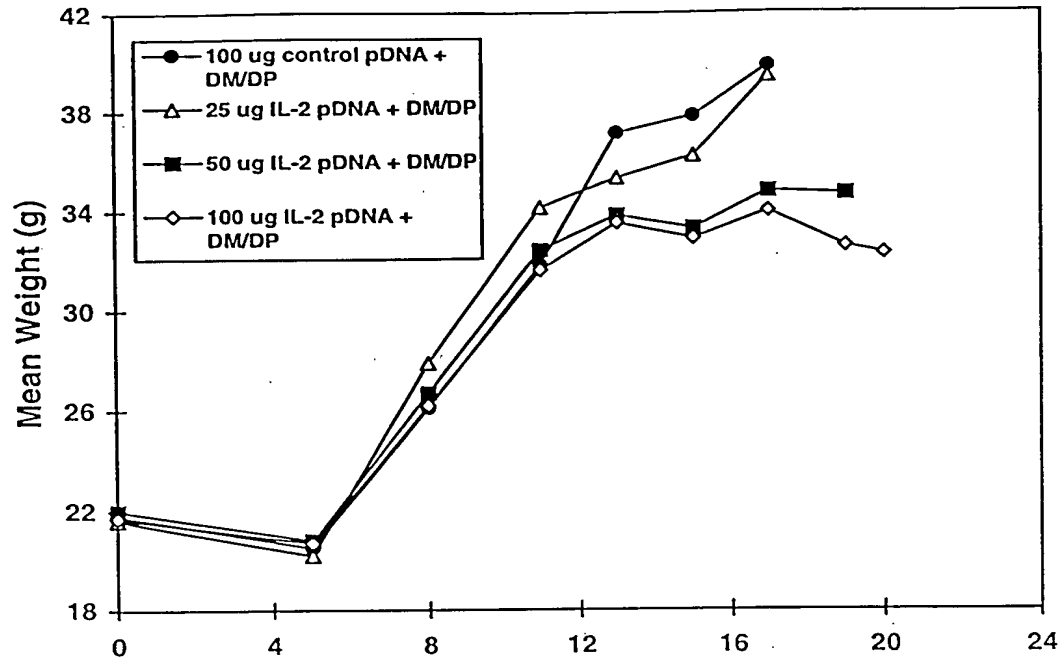

Proportion Surviving
1.0
0.8
0.6
0.4
0.2
0.0
20
30
40
50
60
Days post tumor cell injection

Figure 18

A


100 ug control pDNA + DM/DP
25 ug IL-2 pDNA + DM/DP
50 ug IL-2 pDNA + DM/DP
100 ug IL-2 pDNA + DM/DP
Mean Weight (g)
42
38
34
30
26
22
18
0
4
8
12
16
20
24

B

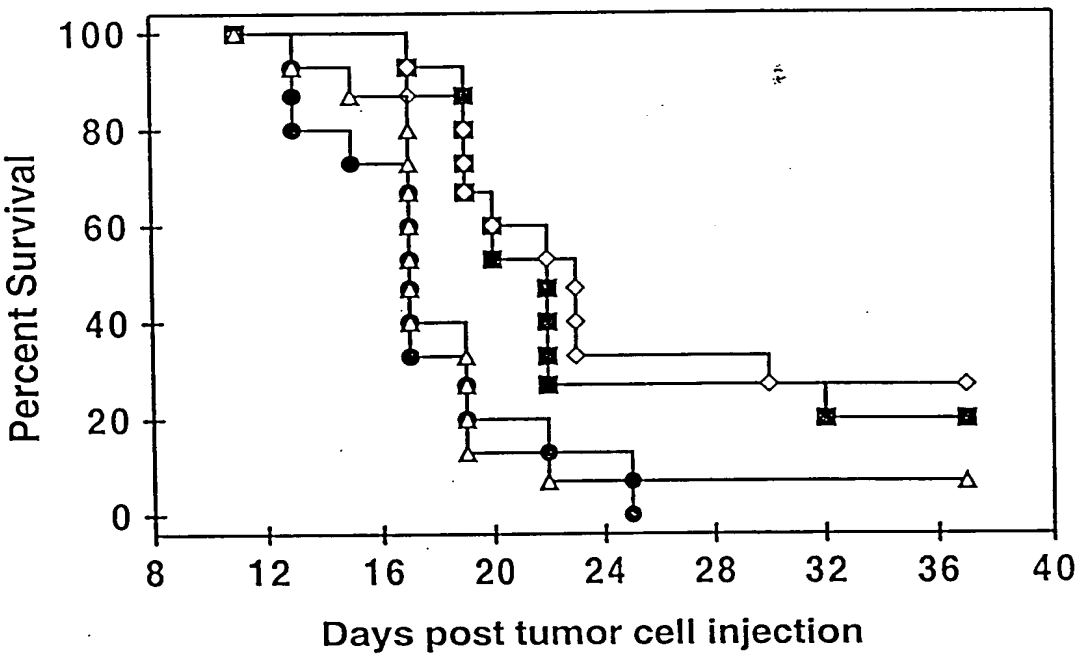

Percent Survival
100
80
60
40
20
0
8
12
16
20
24
28
32
36
40
Days post tumor cell injection

Figure 19

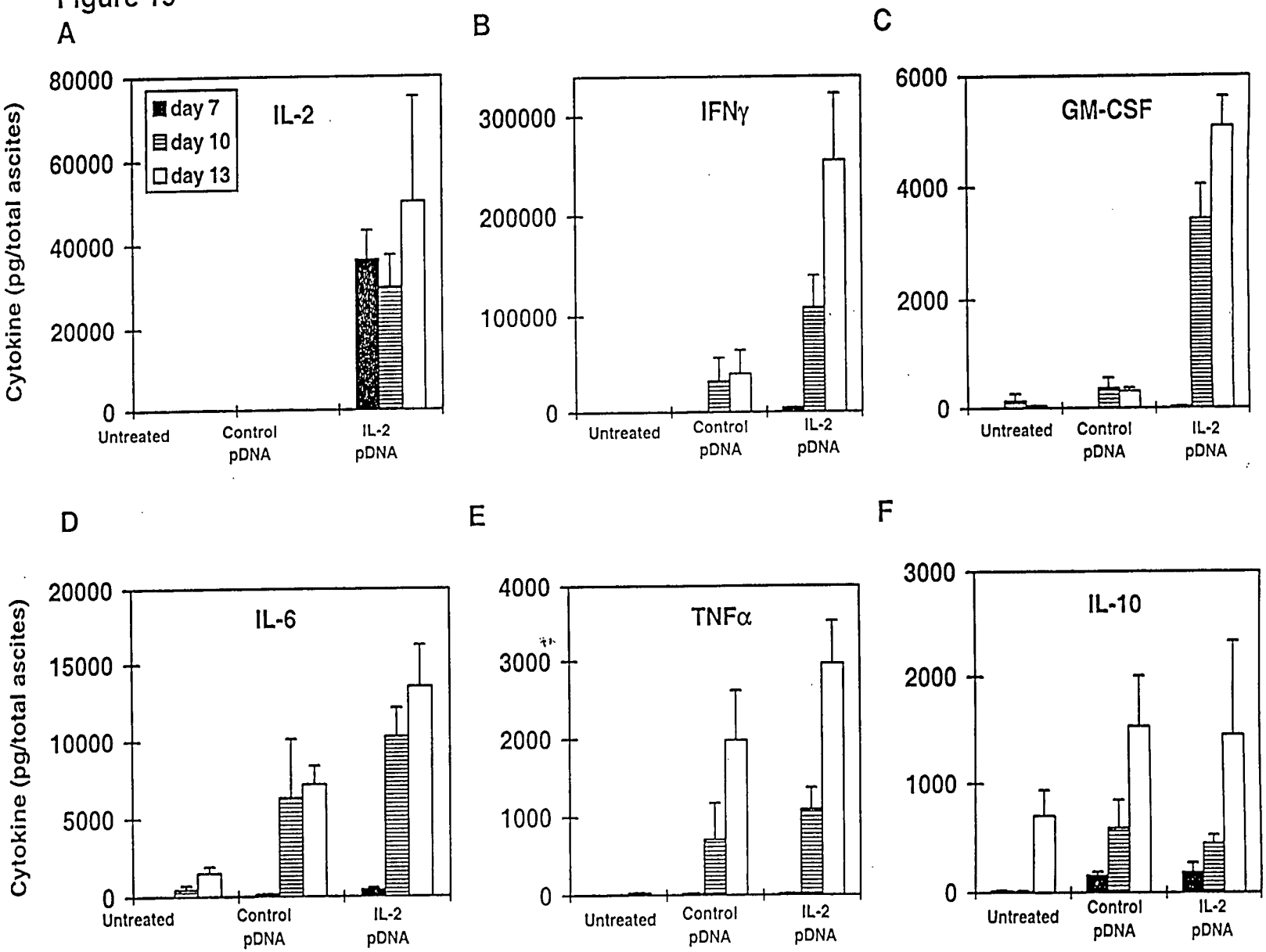
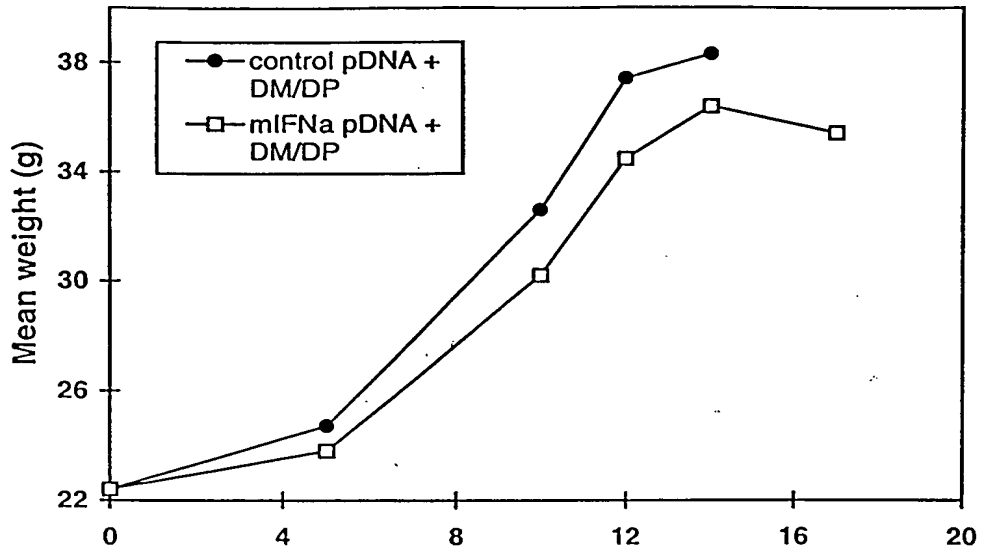

A
B
C
D
E
F
Cytokine (pg/total ascites)
day 7
day 10
day 13
IL-2
IFNγ
GM-CSF
IL-6
TNFα
IL-10
Untreated
Control pDNA
IL-2 pDNA
80000
60000
40000
20000
0
300000
200000
100000
6000
4000
2000
20000
15000
10000
5000
3000
1000

Figure 20

A


control pDNA + DM/DP
mIFNa pDNA + DM/DP
Mean weight (g)
38
34
30
26
22
0
4
8
12
16
20

B

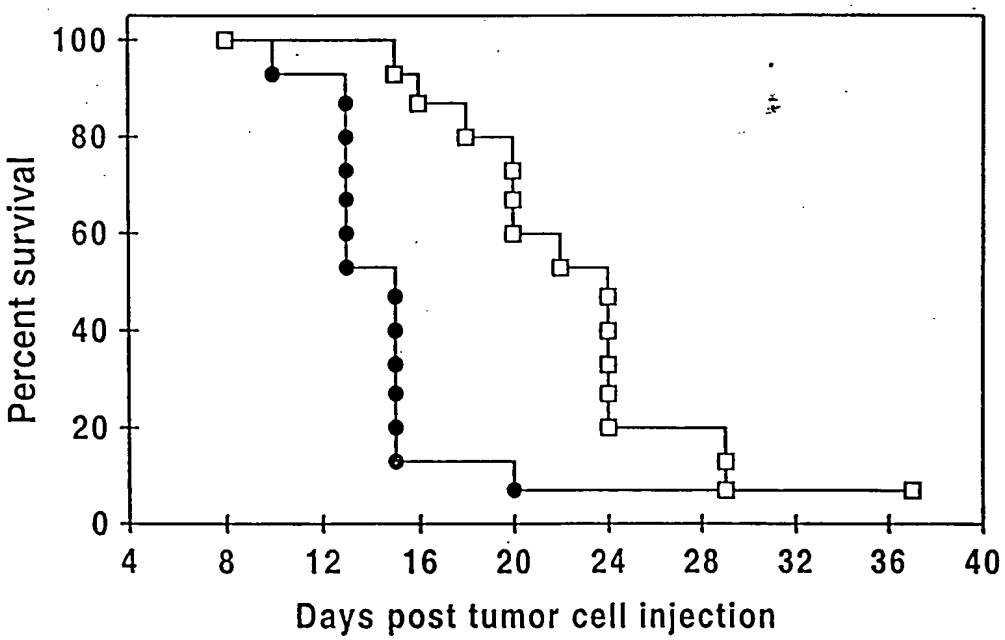
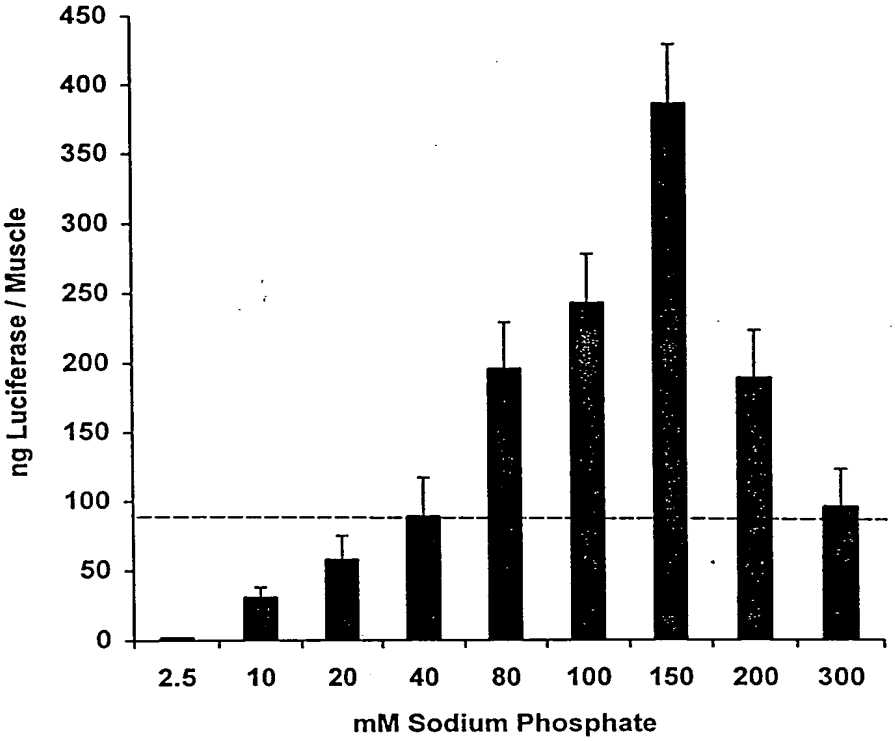

Percent survival
100
80
60
40
20
0
4
8
12
16
20
24
28
32
36
40
Days post tumor cell injection

Figure 1

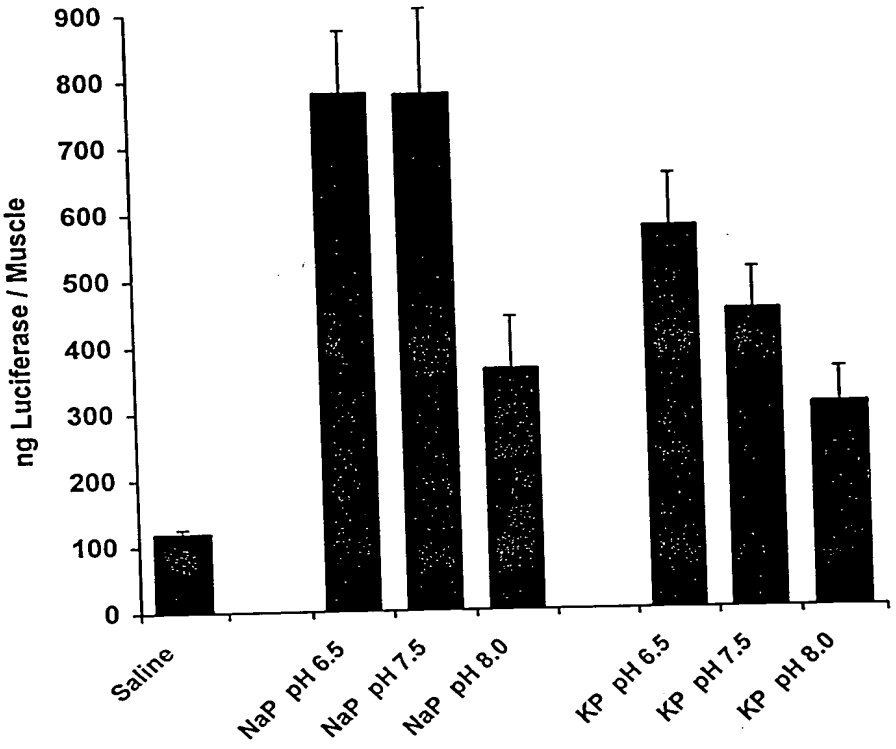
Plasmid Name	GENE	Parental Plasmid	Promoter/ Enhancer	Terminator
VR1223	Firefly Lux	VR1012*	CMV	BGH
VR1255	Firefly Lux	VR1223	CMV	mRBG
VR1412	Bacterial LacZ	VR1012*	CMV	BGH
VR1418	Bacterial LacZ	VR1043	RSV	BGH
VR4151	Human IFN-ω	VR1055	CMV	mRBG
VR3301	Human SEAP	VR1012*	CMV	BGH
VR3502	Rat preproinsulin	VR1012*	CMV	BGH
VR2901	Mouse EPO	VR1012*	CMV	BGH
VR1110	Mouse IL-2	VR1012*	CMV	BGH
VR4111	Mouse IFN-α	VR1055	CMV	mRBG
VR4700	Influenza NP	VR1255**	CMV	mRBG
Intermediate plasmids				
VR1012	none	V1J***	CMV	BGH
VR1055	none	VR1255	CMV	mRBG
VR1043	none	VR1343	RSV	BGH

Figure ~~2A~~ 22A



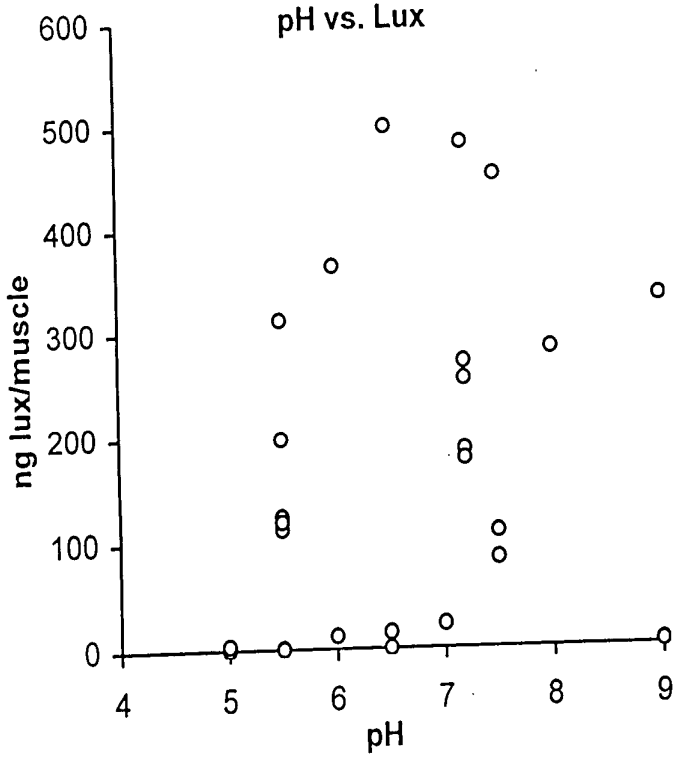
22B

Figure ~~2B~~

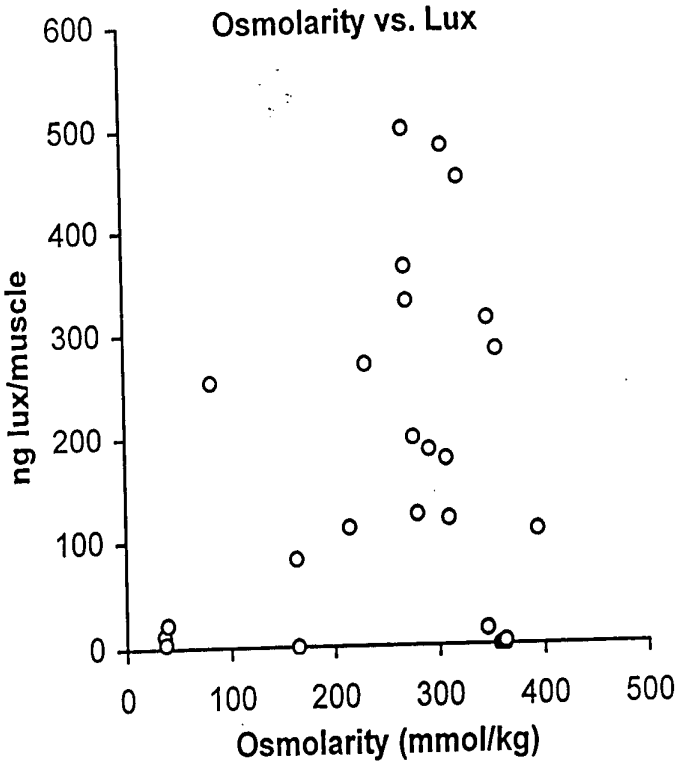


DATE: 2002-3-20

22C
Figure 2C



22D
Figure 2D



2.06557/60

23

Figure 8

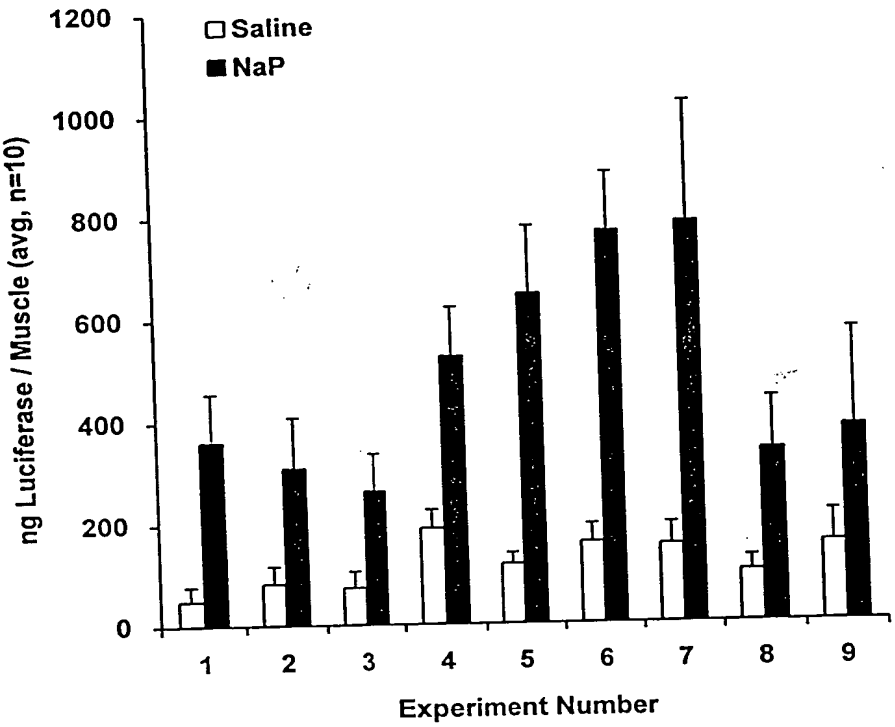

1200
1000
800
600
400
200
0
Saline
NaP
ng Luciferase / Muscle (avg, n=10)
1
2
3
4
5
6
7
8
9
Experiment Number

Figure 24

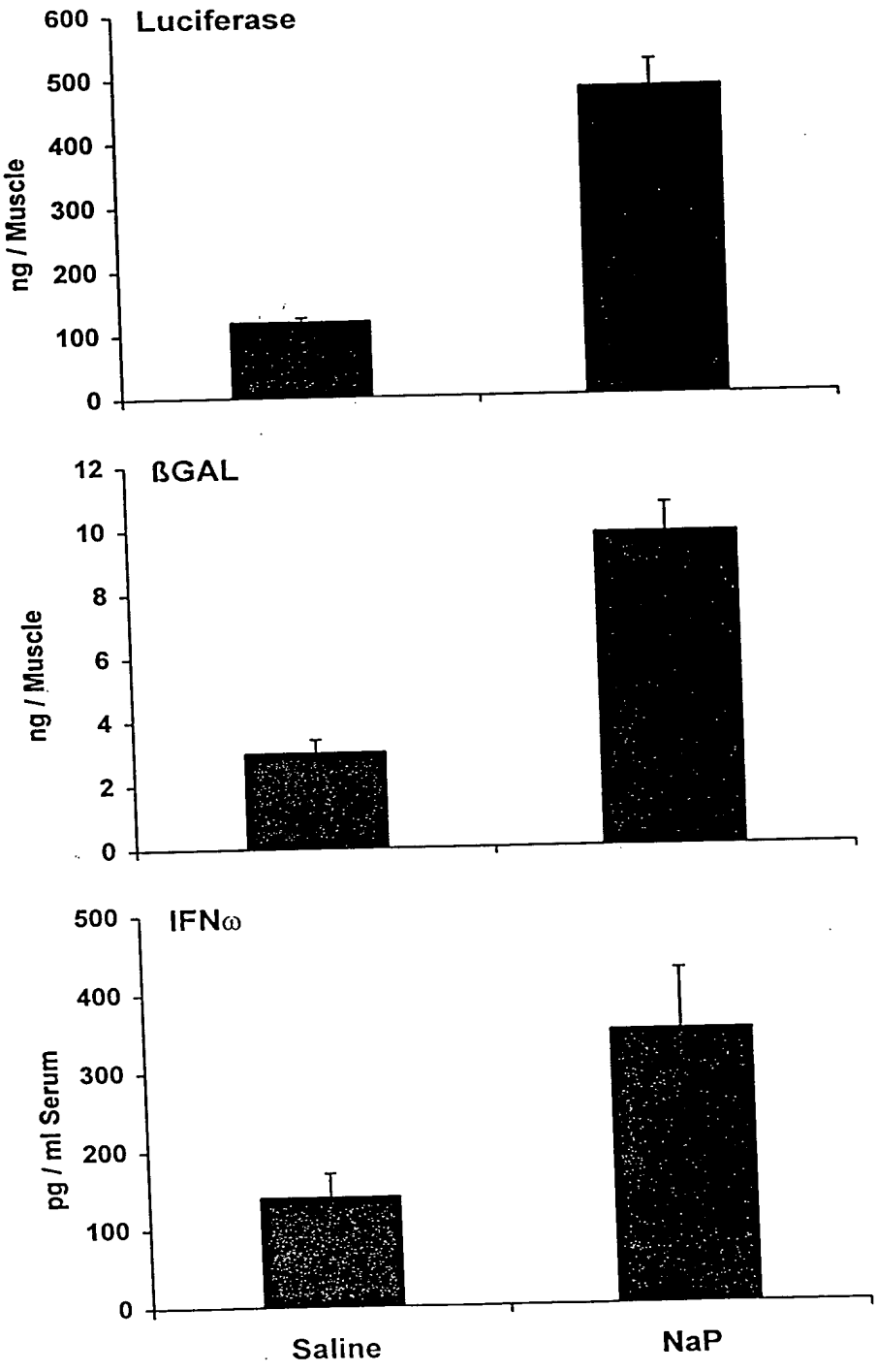
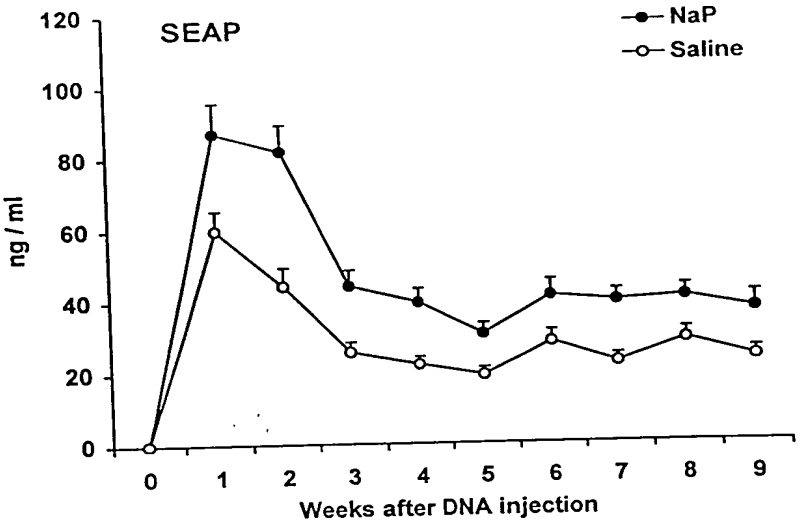
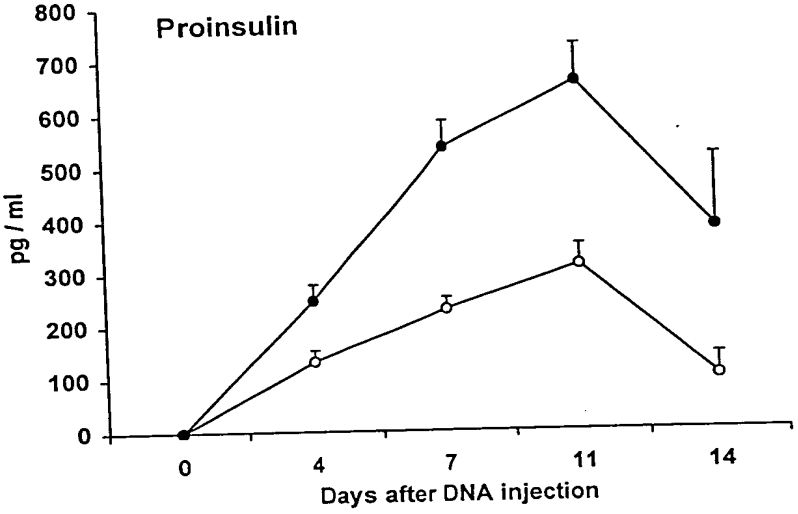
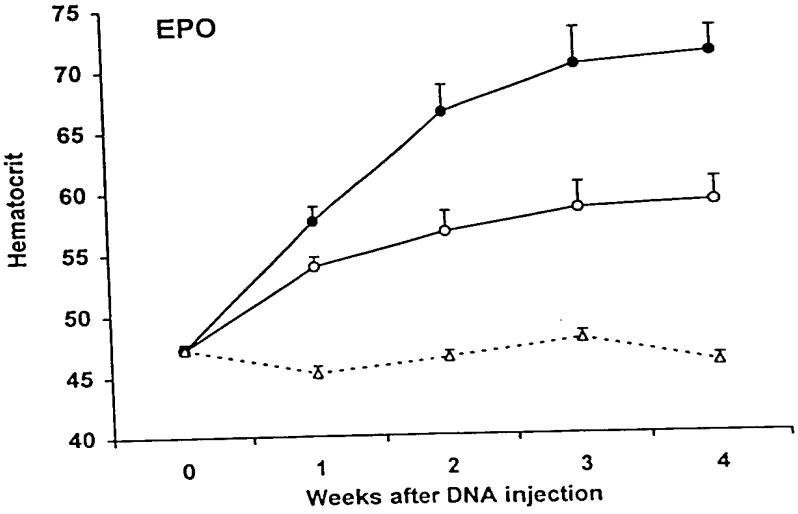

Luciferase
600
500
400
300
200
100
0
ng / Muscle
ßGAL
12
10
8
6
4
2
0
ng / Muscle
IFNω
500
400
300
200
100
0
pg / ml Serum
Saline
NaP

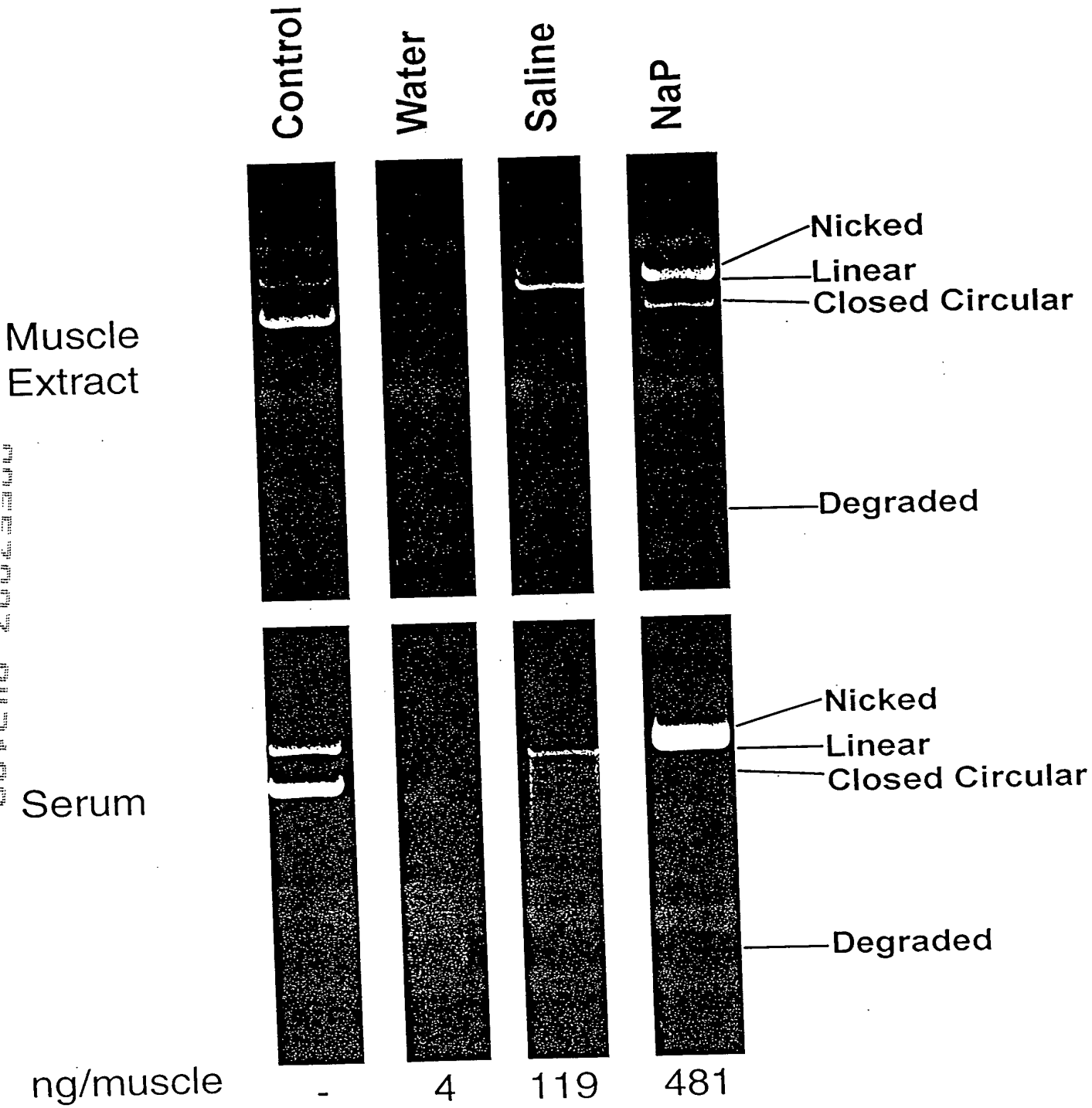
Figure 25


SEAP
NaP
Saline
ng / ml
120
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9
Weeks after DNA injection


Proinsulin
pg / ml
800
700
600
500
400
300
200
100
0
0 4 7 11 14
Days after DNA injection

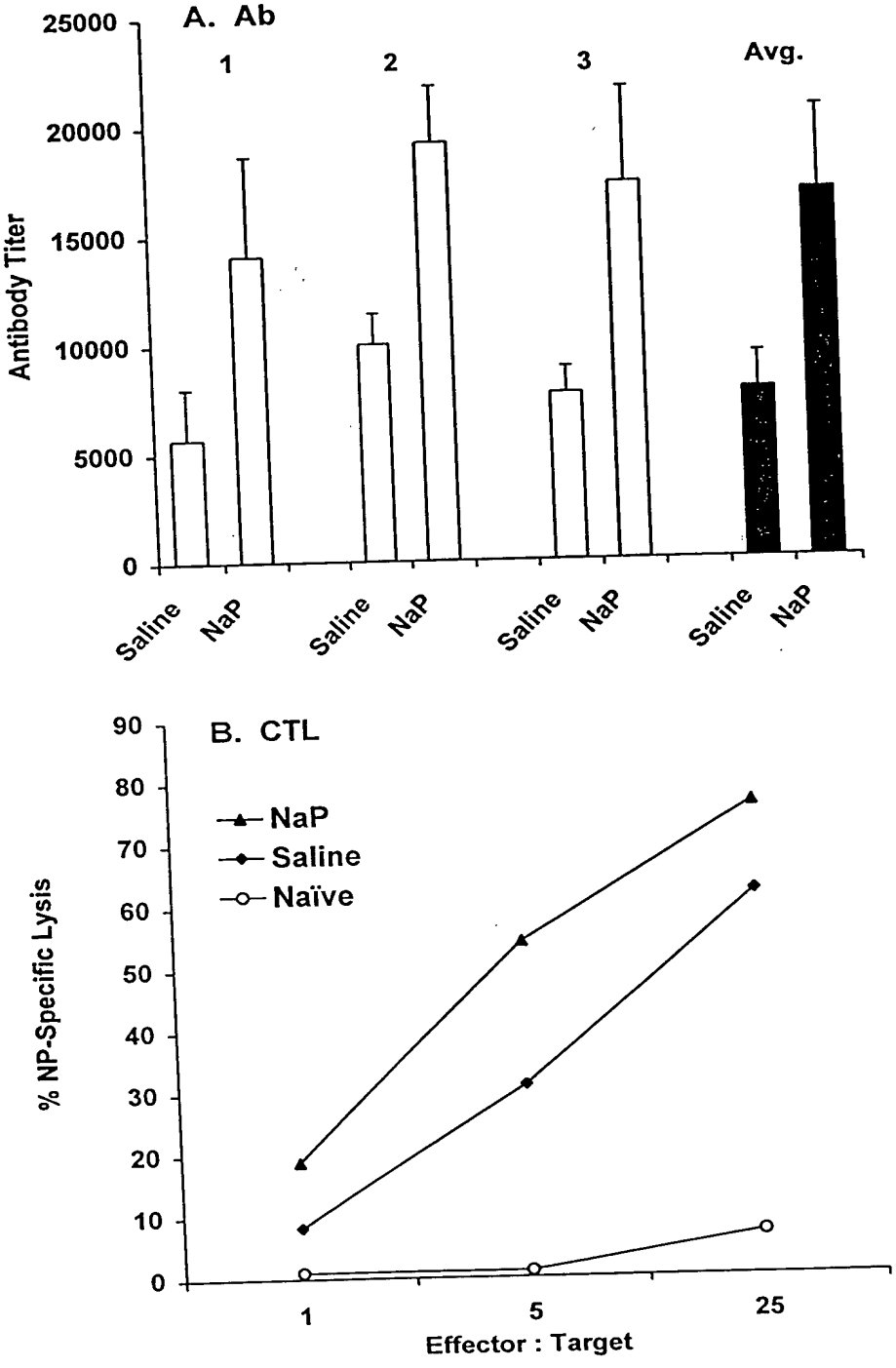

EPO
Hematocrit
75
70
65
60
55
50
45
40
0 1 2 3 4
Weeks after DNA injection

igure 26b


Control
Water
Saline
NaP
Muscle Extract
Nicked
Linear
Closed Circular
Degraded
Serum
Nicked
Linear
Closed Circular
Degraded
ng/muscle
-
4
119
481

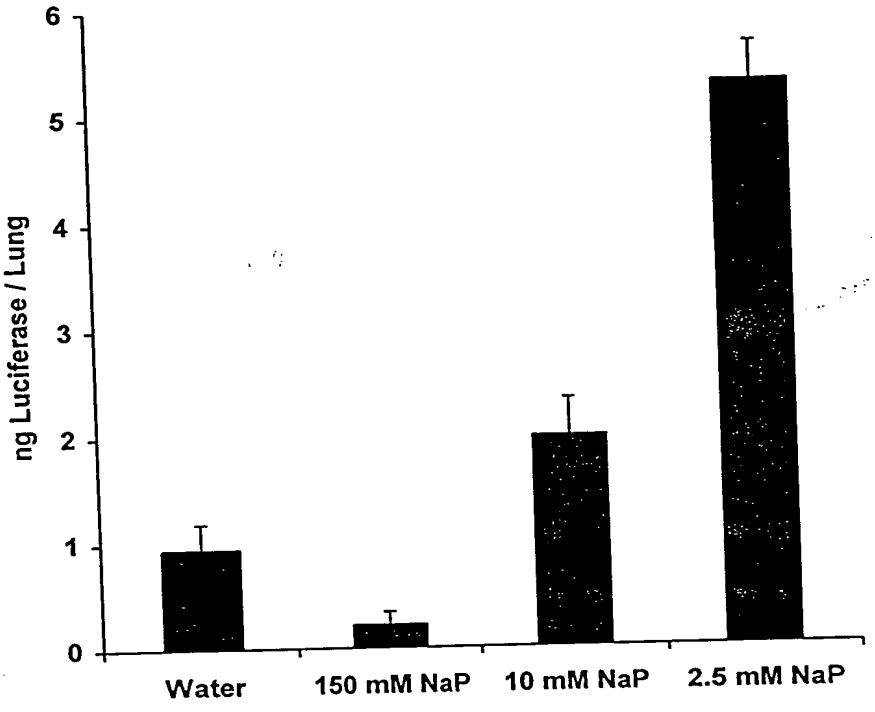
27

Figure 7


A. Ab
1
2
3
Avg.
25000
20000
15000
10000
5000
0
Antibody Titer
Saline
NaP
Saline
NaP
Saline
NaP
Saline
NaP
B. CTL
NaP
Saline
Naïve
90
80
70
60
50
40
30
20
10
0
% NP-Specific Lysis
1
5
25
Effector : Target

28

Figure 8


ng Luciferase / Lung
0
1
2
3
4
5
6
Water
150 mM NaP
10 mM NaP
2.5 mM NaP